Coal Age

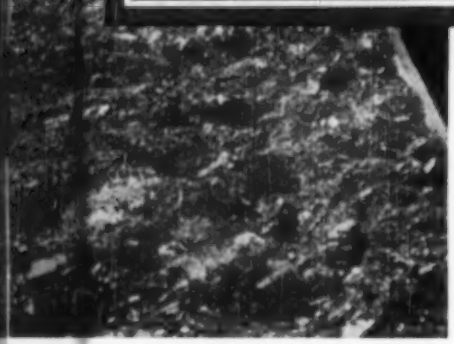
LABOR PEACE ... p 70

Roof Bolting • Froth Flotation of Anthracite
Scraper Stripping • Sludge Recovery by Drying
Improving Mine Village • Shovel Stripping
Battery Power • What's Ahead in Coal Mining

AMAZING HAULAGE RECORDS

ARE SET BY

MINE CARS!



It's not just the 25 billion tons of coal mined this century. It's not merely the fact that a major portion of that coal has moved in mine cars. It's the fact that all that coal has been moved with a minimum of haulage interruptions due to mechanical failure of mine cars...that's *constant haulage.*

You've seen the reason in your own mine...have you ever stopped to think of it? A troublesome mine car doesn't *stop* your coal from moving. You just run the car onto a siding... repair it right there. No big expense—and your coal keeps *moving!* The even tempo of the transportation system is literally *undisturbed.*

If you want truly *constant* coal haulage (and who can afford less?) you need *mine cars.* Let an A.C.F. Representative tell you what a well planned mine car system can mean to your mine —or *any* mine. American Car and Foundry Company, New York • Chicago • St. Louis • Cleveland Philadelphia • Washington • San Francisco Huntington, W. Va. • Pittsburgh • Berwick, Pa.

a.c.f. MINE CARS

for Constant Haulage

RESEARCH KEEPS **B.F.Goodrich** FIRST IN RUBBER

Less belt damage, less "spill" with B. F. Goodrich cord belts

THIS B. F. Goodrich oilproof beltroad handles washed and sized coal from plant to river barges on a retractable conveyor system. Cord belts keep centered on idlers, require less maintenance because cords are free to flex. No spillage; troughs better even when running empty. Longer centers, higher lifts can be used. Creasing action between idlers is eliminated.

Each lengthwise cord in this B. F. Goodrich belt is completely surrounded by rubber — no cross threads tie them together. The rubber-borne cord body has practically the same impact resistance as the cover itself. Cords are free to "give" when an impact occurs. It distorts temporarily, distributing and absorbing a shock that would damage stiff, unyielding plies.

In addition to the regular cord body in a B. F. Goodrich cord belt, a patented *Transcord breaker* has been added. It's an extra layer of parallel cords in rubber, placed across belt width.

The impact cushion of the cord belt resists cuts and gouges; the Transcord breaker keeps the cover from stretching beyond elastic limits, provides better adhesion between cover and carcass. With each tightly twisted cord completely sealed in rubber, the cord belt resists effects of acid materials, moisture, mildew.

The first B. F. Goodrich cord belt ever made is still on the job after 12 years and over 14 million tons of coal handling. The cord belt was developed by B. F. Goodrich for tough coal and rock hauling jobs. Call in your local BFG distributor, or write: *The B. F. Goodrich Company, Industrial and General Products Division, Akron, Ohio.*

Conveyor Belts BY
B.F.Goodrich
RUBBER FOR INDUSTRY

The Champion

OF THE 75 YARD DASH---

BACKWARD!

Bill Robinson, the dancer, was famous the world over for his agility and speed, his perfect co-ordination and rhythm. The most extraordinary performance by Bill, however, was not his rapid-fire dance up and down a flight of stairs, but one which put him in a Champion class all by himself. He held the unofficial world's record for running BACKWARD—75 yards in 8 1/5 seconds, a performance recognized by the National AAU office. He once raced Raymond Champman, the famous Cleveland (American League) shortstop, one of the swiftest men in baseball. Robinson, running backward, beat Champman.

HULBURT OIL & GREASE COMPANY, PHILADELPHIA, PA.

Specialists in Coal Mine Lubrication

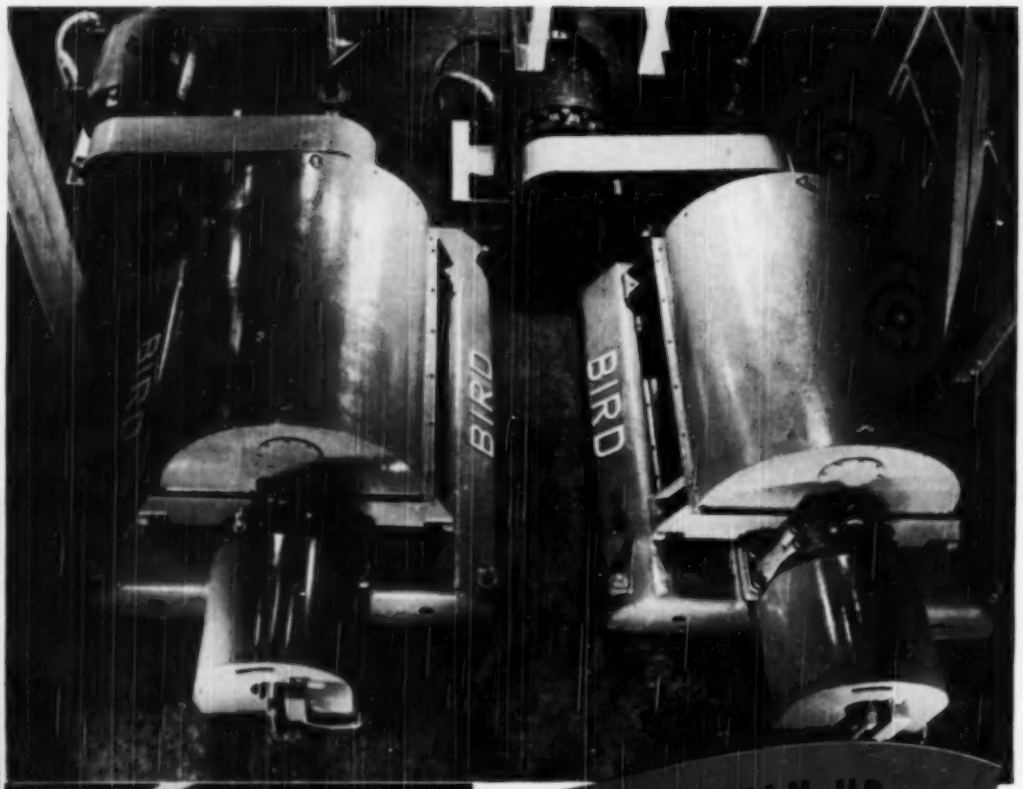
The Champion

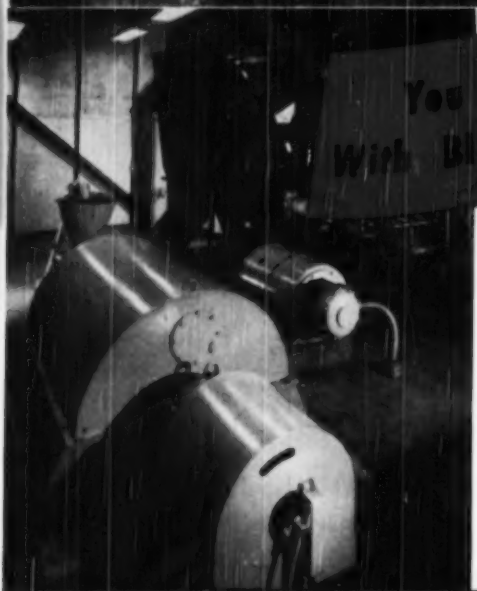
...IN COAL MINE LUBRICATION

Hulburt Quality GREASE

"The Champion"

Whichever way you look at it, Hulburt Quality Grease is in a class by itself when it comes to lubrication in Coal Mines. You can confidently look forward to your lubrication troubles rapidly receding into the past, put to flight by the unmatched performance of Hulburt Quality Grease. Let a Hulburt Lubrication Engineer go "downstairs" deep into your mine. When he comes up he'll have the answer to your lubrication problems and, with Hulburt Grease, swiftly put a "shortstop" to your lubrication troubles.





You Can Make A CLEAN UP
With BIRD "POLISHERS" Like These

• This compact little unit polishes up the coal cleaning water to make it fit for re-use. Whatever your system for handling and cleaning coal, you're likely to find that the Bird Polisher quickly pays for itself in water saved, fine coal recovered or unwanted high ash slimes neatly and completely removed.

The Bird Polisher does a better job of cleaning up the water than any method previously employed. It runs automatically and continuously for long periods without maintenance. It is available in six sizes to meet any volume need. Other coal plants are cashing in on it.

May we give you the story as it applies to your specific needs?

BIRD MACHINE COMPANY • South Walpole • Massachusetts

THIS MONTH'S COVER

KEY TO COAL'S ABILITY to build a strong industry, as well as its capacity to meet future demands, is to great degree in the hands of its miners. If you are interested in what you, your company and its negotiating representatives can do to improve union and miner cooperation and foster public goodwill, read "New Start on Labor Peace" beginning on p 70.

COMING IN OCTOBER

● **Ready to Serve**—Here's how coal stands if national defense suddenly requires peak output—what it can do and what it needs.

. . . AND EVERY MONTH

● **In addition to the steady flow** of major articles reporting and describing the new and significant in coal-mine operation, COAL AGE regularly publishes these four departments. You'll find them worth checking for new and helpful ideas.

● **Foremen's Forum**—This month tells how a supervisor can prepare himself to display much-needed leadership in an emergency (p 98).

● **Operating Ideas**—11 mine-tested ideas this month you may be able to use whole-hog or adapt to your own operation (p 102 to 110).

● **Equipment News** — The latest in new machinery and equipment (p 112 to 128). Postcard will bring you more data without obligation.

● **News Round-Up**—The industry, its men and organizations (p 135).

Alfred M. Staehle, Publisher Ivan A. Given, Editor
J. H. Edwards W. H. McNeal W. A. Stanbury Jr.
H. Davis F. A. Zimmerli G. B. Bryant Jr., Washington
R. W. Davis, Sales Manager

World News Offices: London, Paris, Frankfurt, Tokyo, Bombay, Melbourne, Rio de Janeiro, Mexico City

CONTENTS • SEPTEMBER • 1950

Editorial: Ready to Serve 69

New Start on Labor Peace 70
New-found unity can improve union relations and boost miner cooperation.

Roof-Bolting for Efficiency at Boone County Coal Corp. 74
How roof-bolting in low coal upped output per man 55 to 100%

Froth Flotation at Tamaqua 76
Washery-water discharge provides 525 tpd of marketable anthracite fines.

High-Speed Scrapper Stripping—D. K. HEIPLE 80
Here's an efficient operating plan that helps improve marginal land.

What's Ahead in Coal Mining 82
A round-up of 13 significant trends and ideas you'll want to think about.

Recovering Sludge at Harco 84
Peabody Coal profitably "mines money" from a 10-yr-old sludge pond.

Mining Town Gets New Look—HAROLD DAVIS 88
Both workers and company are justly proud of their Pennsylvania village.

Battery Power for Shuttle Cars—M. W. HEINRITZ 91
95 time studies show how battery units pay off in cost and output.

Stripping Without Shooting 94
New-type medium-weight shovel strips up to 50 ft. of tough cover.

Surge Conveyor Cushions Load to Main Line 102

Corrosion Auger Cleans Fouled Mine Pipe 104

Automatic Latch Saves Truck-Dumping Time 104

Stone Stoppers Prevent Damage to Strip Shovel 105

New Forge Built from Old Boiler 105

Shop-Built Battery Lifter Does Other Jobs Too 105

Bolting Drill Mount Uses Two Jacks and Roller Chain 106

Mechanic Builds His Own Test Stand 108

Sheaves Halved for Easy Removal 108

Mine Locomotive Rebuilt for Strip-Mine Haulage 110

Detachable Cap-Lamp Holder Focuses Light on Work 110

Foremen's Forum 98
Equipment Bulletins 128
News Round-Up 135
Equipment News 112
Among the Manufacturers . . 130
Coal Men on the Job 140

COAL AGE (with which is consolidated "The Colliery Engineer" and "Mines and Minerals") is published monthly on the 1st. Allow at least ten days for change of address. COAL AGE articles are indexed regularly by Engineering Index, Inc. COAL AGE'S own index published annually may be had on request to the Editorial Department. Contents Copyright 1950 by McGraw-Hill Publishing Co., Inc.; all rights reserved.

McGraw-Hill Publishing Company, Inc.—James H. McGraw (1860-1948), Founder; Curtis W. McGraw, President; Willard T. Chevalier, Executive Vice President; Joseph A. Gerardi, Vice President and Treasurer; John J. Cosko, Secretary; Paul Montgomery, Senior Vice President, Publications Division; Ralph B. Smith, Editorial Director; Nelson Bond, Vice President and Director of Advertising; J. E. Blackburn Jr., Vice President and Director of Circulation.

Subscription Information: All communications about subscription service should be addressed to the Director of Circulation, COAL AGE, 330 South Wells St., Chicago 6, Ill., or 330 W. 42nd St., New York 18, N. Y. Please indicate position and company connection on all subscription orders. Subscription rates: United States and possessions, $5 for one year, $8 for two years, $10 for three years. Canada, $6 for one year, $10 for two years, $12 for three years. Pan-American countries, $12 for one year, $20 for two years, $25 for three years. All other countries, $15 for one year, $25 for two years, $30 for three years. Single copies, U. S. and possessions and Canada, 50c; Pan-American countries, 75c; all other countries, $1.50. Entered as second-class matter Aug. 27, 1948, at the Post Office at Chicago, Ill., under the Act of March 3, 1879. Printed in the U. S. A. Cable Address: "McGraw-Hill, N. Y." Member A.B.P. Member A.B.C.

Publication office: 330 South Wells St., Chicago 6, Ill. Editorial and executive offices: 330 W. 42nd St., New York 18, N. Y. Branch offices: 520 North Michigan Ave., Chicago 11; 68 Post St., San Francisco 4; Aldwych House, Aldwych, London W. C. 2; Washington, 4; Philadelphia, 3; Cleveland 15; Detroit, 26; St. Louis, 1; Boston, 16; Atlanta, 3; Los Angeles, 17; 738-9 Oliver Bldg., Pittsburgh 22; Dallas, 1.

District Managers: Atlanta, R. C. Maultsby; Chicago, C. J. Cash; Cleveland, W. M. Spears; Dallas, J. H. Allen; Los Angeles, C. W. Dysinger; New York, T. E. Alberts; New York and New England, H. R. Denmead; Philadelphia, W. A. Pieber; Pittsburgh, H. C. Ogle; St. Louis, F. W. Reitz; San Francisco, J. W. Otterson.

Volume 55 Number 9

NO RUST
NO SLUDGE

in your hydraulic mechanisms

when you use TEXACO REGAL OILS (R&O)

Compare the performance of *Texaco Regal Oils (R & O)* with ordinary oils as hydraulic mediums. The superiority of *Texaco Regal Oils (R & O)* will be evident . . . in the absence of stoppages and the resulting longer periods of uninterrupted work from your machines . . . in smoother performance . . . greater cleanliness of systems . . . lower maintenance costs.

Texaco Regal Oils (R & O) are turbine-quality oils, fortified with effective anti-rust and anti-oxidation additives and specially processed to prevent foaming. Thus, you need not worry about sludge-clogged orifices, nor rust damage to pumps or systems. All parts work better and last longer.

You can get *Texaco Regal Oils (R & O)* in the exact viscosities your operating conditions call for. No "cutting back" is ever necessary.

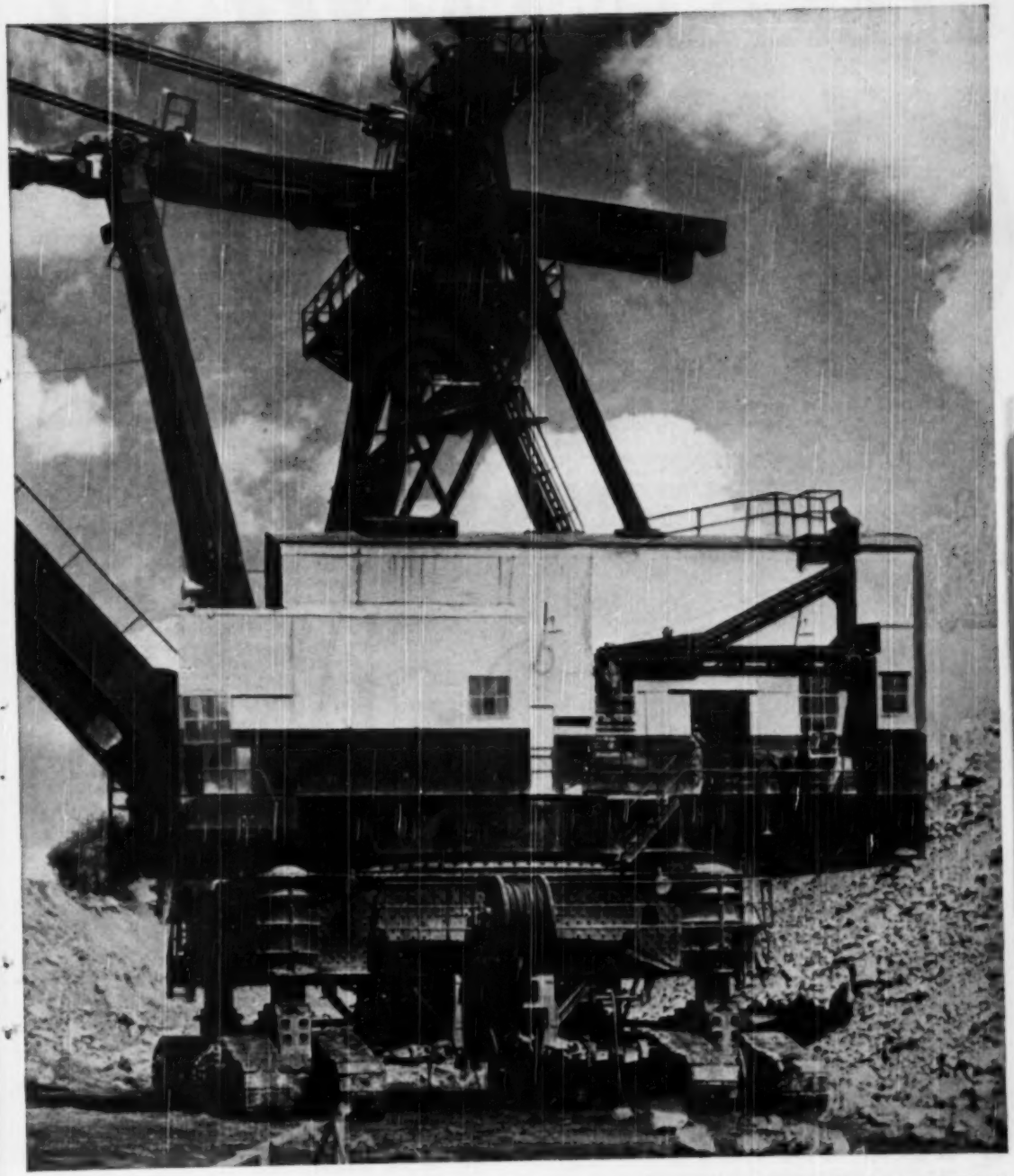
And here's another cost-saving suggestion: Lubricate mine car wheels with *Texaco Olympian Grease.* You'll assure easier starts, even in winter weather, and materially reduce your maintenance costs.

Let a Texaco Lubrication Engineer explain the many cost-saving advantages of using Texaco lubricants. Just call the nearest of the more than 2,000 Texaco Wholesale Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

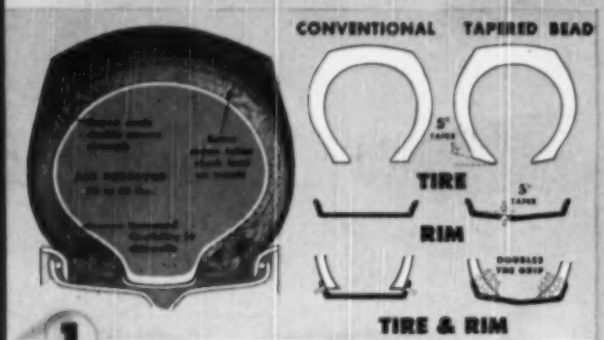
TEXACO

TEXACO LUBRICANTS



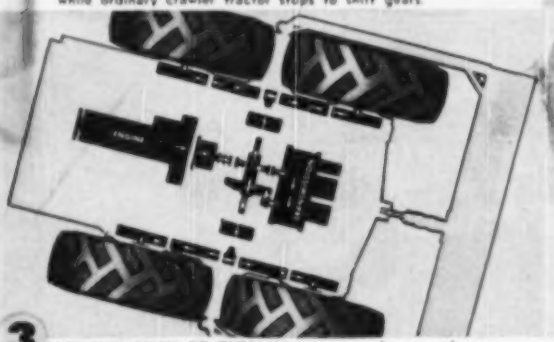
For the Coal Mining Industry

HERE'S WHY 19 m.p.h.

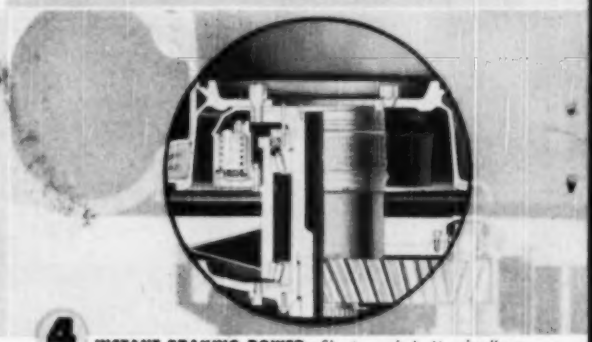


1 **BIG TIRES INCREASE TRACTION**—Tournadozer's 21.00 x 25 low-pressure tires give you greater ground-gripping traction and increased flotation in sand, mud, snow or ice. Tapered bead doubles tire-to-rim grip, prevents tire slipping. Rayon cords add strength and flexibility . . . increase tire life.

2 **INSTANT GEAR SELECTION**—Change gear ratios instantly, automatically, with finger-tip air-valve lever. Constant power retains vital momentum . . . keeps dirt rolling . . . gets more work done. Tournadozer travels 100' in 3rd gear while ordinary crawler tractor stops to shift gears.



3 **180 H.P. PUSH OR PULL**—Hangs on and moves heavy loads even in toughest going. Low compression ratio diesel engine gives more power with less fuel. 4-wheel drive provides quick pickup on level or up steep grades. Rig rolls on rubber . . . has no tracks to grind in abrasive materials.



4 **INSTANT BRAKING POWER**—Short-coupled 6' wheelbase and instantaneous shift give you a compact, fast-stepping unit. Heavy-duty 4-wheel air brakes, with 1305 sq. in. of braking surface on each wheel — 5220 sq. in. on all four — give you safe, sure, complete control at all times.

FIRST this job-proved dozer on rubber "runs" at 19 m.p.h., instead of crawling at 5 to 8 m.p.h. It maneuvers twice as fast—and dozes twice as fast as the average crawler. It gives you reverse speeds to 8 m.p.h. . . . cuts deadhead cycle time by 2.5 to 1. And, you get far more use from its greater speeds, because you have instantaneous speed selection and can change into higher gears without shifting or losing momentum.

SECOND Tournadozer has the high-speed mobility to put normal waiting periods to work. When needed on scattered odd jobs, operator just hops on this big dozer . . . and drives 19 m.p.h. cross-country or over highways. No blocking, no waiting for trailer, no loading or unloading delays. Giant 21.00 x 25 low-pressure tires prevent damage to pavement and other surfaces . . . and, in poor footing, give you plenty of traction to pull through mud, sand, or snow which would stall ordinary crawler dozers.

THIRD you can keep Tournadozer working and earning during the off-season by equipping it for subcontracts or rentals with any of 10 auxiliary tools — including Scraper, Angledozer, Logging Winch, Side Crane, or Snow Plow. With each unit, Tournadozer's 180 h.p. engine, 4-wheel drive, and rubber-tired mobility will pay off in more work done.

Let your LeTourneau distributor give you all the facts. Call him . . . or write for new Tournadozer Bulletin TD-117 TODAY!

LET

Send now to: **R. G. LeTOURNEAU, Inc., Peoria, Illinois**

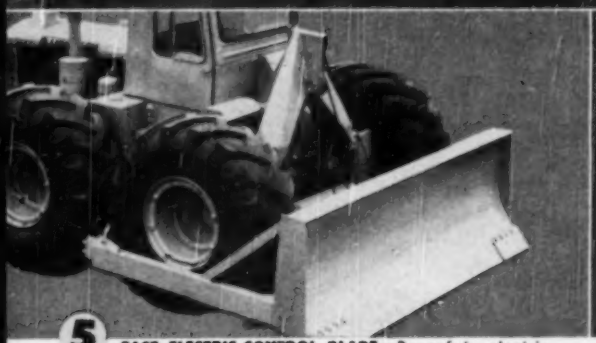
We may be in market for one or more Tournadozers. Please send information on ☐ 180 h.p. C Tournadozer or ☐ 122 h.p. D Tournadozer for use with:

NAME _____
TITLE _____
COMPANY _____
STREET _____ CITY, STATE _____
TYPE OF WORK _____

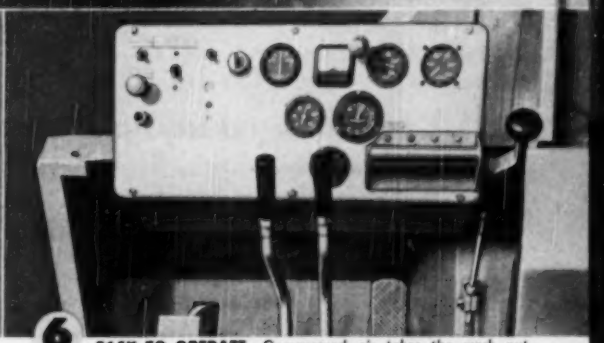
☐ Bulldozer
☐ Angledozer
☐ Carryall Scraper
☐ Logging Winch
☐ Tree Pusher
☐ Snow Plow
☐ Side Crane
☐ Rooters
☐ Rollers
☐ Root Rake

TOURNADOZER will do more work for you

HANDLES 7 MAINTENANCE JOBS IN 10 HOURS—At their Genoa open-pit iron mine near Eveleth, Minn., E. W. Coons Co. has assigned a number of widely scattered jobs to one C Tournadozer. In a typical 10-hr. shift, the hustling rubber-tired "C" maintains 2 overburden dumps, stockpiles lean ore, cleans up around 3 large stripping shovels, and handles haul road maintenance. Compared to ordinary crawler operation, Tournadozer's work-and-run ability makes every hour productive for profits.



5 **FAST ELECTRIC-CONTROL BLADE**—Powerful, electric-control PCU plus smooth, accurate, short-coupled cable connection gives better blade control to match high dozing speed. 44" lift . . . unlimited drop . . . 5" tilt at either end. 11' 2" x 3' 7" bowl fills fast, drifts big 2½-yd. load.



6 **EASY TO OPERATE**—Compressed air takes the work out of Tournadozing. Simple controls are air-actuated . . . easy to reach. Operator sits up front ahead of engine . . . can see where he's going, what he's doing. No stretching, no twisting, no end-of-day fatigue slow-down.

LETOURNEAU PEORIA, ILLINOIS — JOB-PROVED The World Over — **TOURNADOZERS**

IT'S RUBBER THAT PUTS THE ACTION IN TRACTION

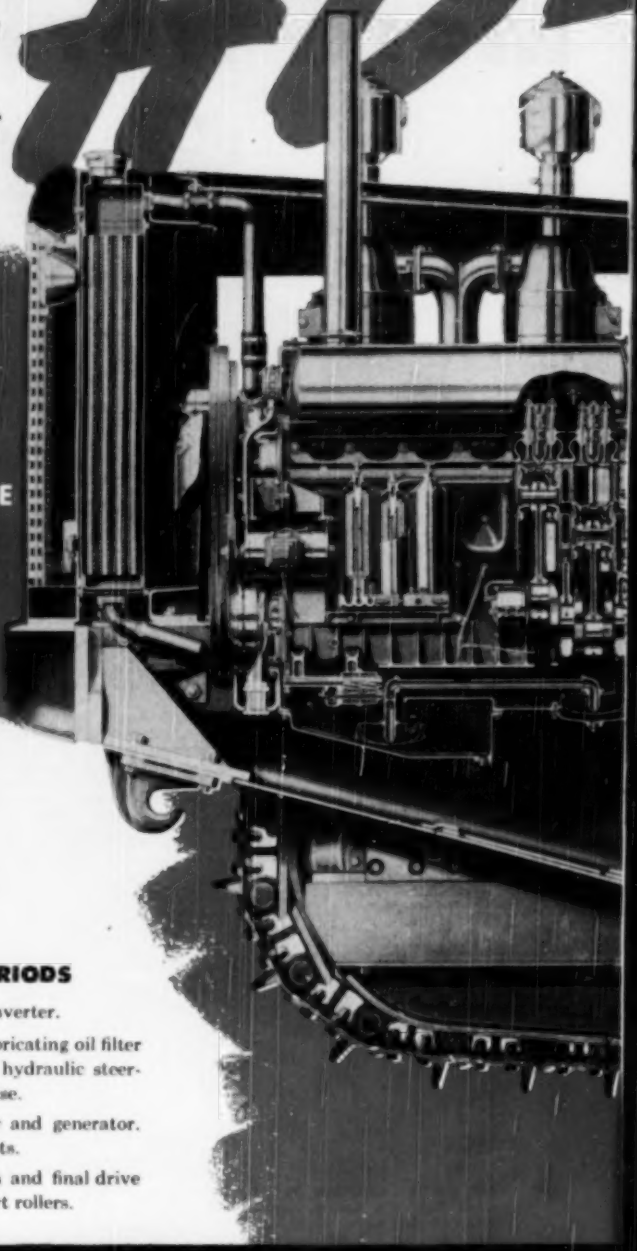
these add up to HP

- ✓ Torque Converter Drive
- ✓ 40,000 lbs. of Balanced Weight
- ✓ GM 2-Cycle Diesel Engine

plus these bonus features

- FASTER, EASIER SERVICING
- SIMPLIFIED MAINTENANCE
- LESS "DOWN TIME"
- LESS COST

HIGHER TRACTOR OUTPUT



All adjustments are unusually accessible.

All fittings or lubrication points readily reached — none under tractor. Draining transmission final drives and engine crank case are the only operations which need to be done from beneath the tractor.

Types of oils and greases needed are cut to a minimum.

SIMPLIFIED LUBRICATION PERIODS

AT 10 HOURS — 2 grease fittings on torque converter.

AT 75 HOURS — drain engine oil . . . change lubricating oil filter elements . . . check final drive, transmission and hydraulic steering . . . only 1 grease fitting on engine clutch release.

AT 200 HOURS — drop oil in cups of starter and generator. Four fittings; fan, fan belt idler and universal joints.

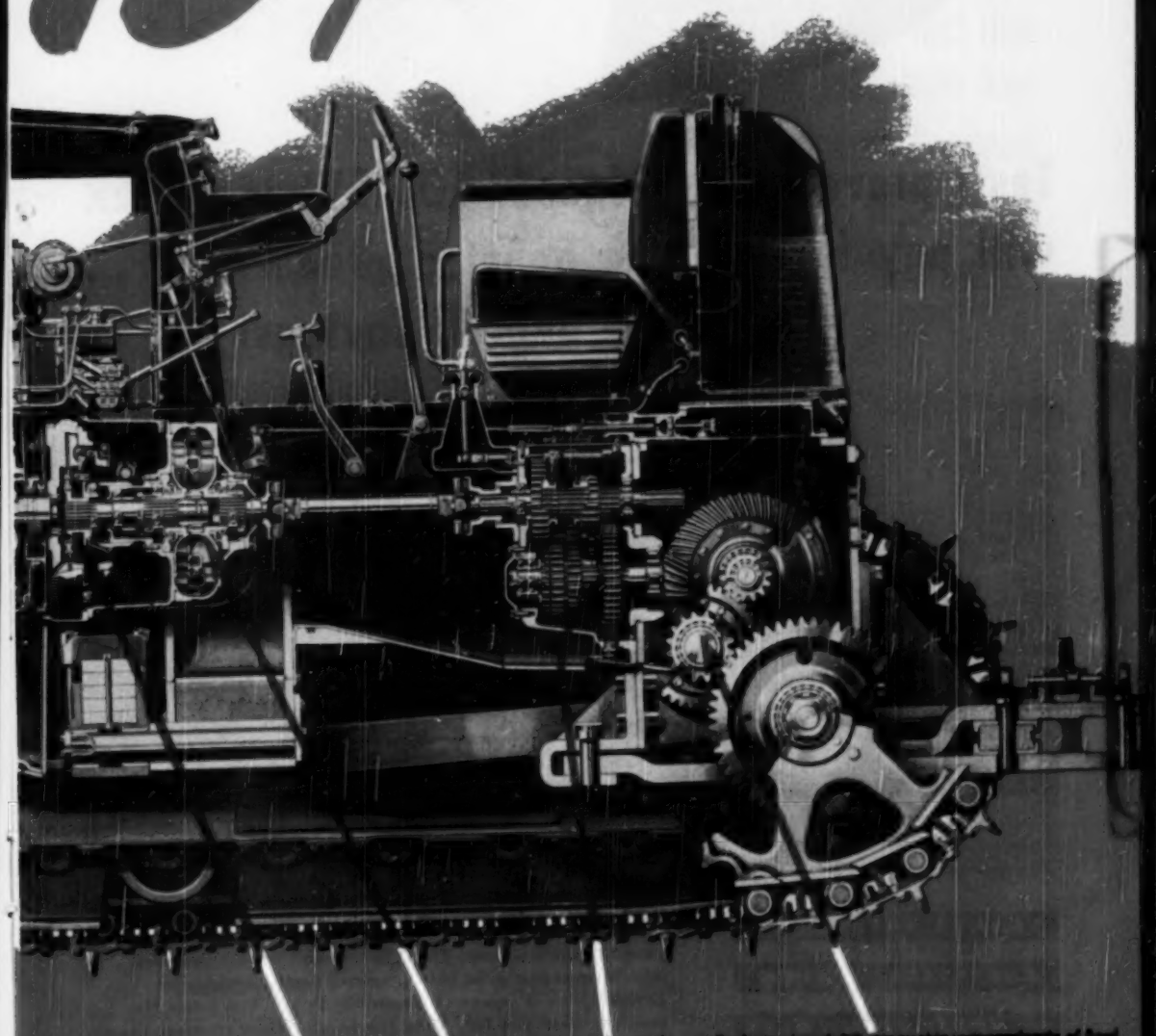
AT 1,000 HOURS — change oil in transmission and final drive . . . lubricate truck wheels, track idlers and support rollers.

ALLIS-CHALMERS

TRACTOR DIVISION · MILWAUKEE, U.S.A.

for Greater Production
for Easier Operation
for Simplified Servicing

-19 performance



maintenance easily accomplished

No need to remove unrelated parts to reach parts needing attention.

Engine clutch and torque converter can be removed without disturbing engine or transmission—transmission assembly removable without disturbing engine, clutch or bevel gear.

Each steering clutch and reversible transmissions of final drive or bevel gear.

Special tools cut to minimum.

Complete stocks of replacement parts—made in same factory to same meeting specifications as are on original tractor—are carried by Allis-Chalmers dealers.

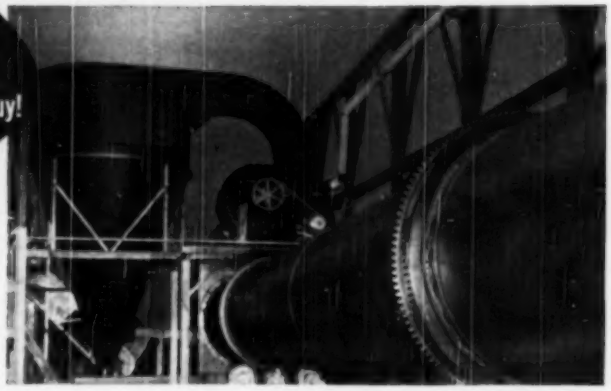
A TRACTOR MAKES MONEY FOR AN OWNER ONLY WHEN IT'S WORKING. THE HD-19 IS LOW IN TOTAL DOWN TIME REQUIRED FOR SERVICING AND MAINTENANCE. IN OUTPUT PER DAY, PER MONTH, PER SEASON, IT'S TOPS.

See Louisville for

CREATIVE DRYING ENGINEERING

Tests prove "job-designed" LOUISVILLE DRYER will pay for itself in boosted production . . . in overall savings!

KNOW THE RESULTS before you buy!



FORMER DRYER	
Installed cost	$109,000
Daily production (tons)	960
Drying cost per ton	.432

LOUISVILLE DRYER	
Installed cost	$83,400
Daily production (tons)	1,200
Drying cost per ton	.282

YEARLY SAVINGS OF LOUISVILLE DRYER IN OPERATING COSTS ALONE $24,000

Worried over high production costs? Take a look at the performance comparison shown at the left. Here's proof that a new job-designed Louisville Dryer can lift plant production by at least 25%—will pay for itself with production cost savings in less than four years.

Call in a Louisville engineer. Let him survey your production. From his studies, a dryer can be designed to fit your specific problem. Then, in our own unique research laboratories and pilot plant, we will predetermine the performance of your new Louisville Dryer. You know the results before you buy—and the results *must* be more than satisfactory. For complete information, write today.

Other General American Equipment:
Turbo-Mixers, Evaporators, Thickeners, Dewaterers, Towers, Tanks, Bins, Filters, Pressure Vessels

Louisville Drying Machinery Unit
Over 50 years of creative drying engineering
GENERAL AMERICAN TRANSPORTATION CORPORATION
Dryer Sales Office: Hoffman Bldg., 139 So. Fourth Street Louisville 2, Kentucky
General Offices: 135 South La Salle Street, Chicago 90, Illinois
Offices in all principal cities

TURN TO GOODYEAR TIRES

Their lower cost-per-mile is indicated by the fact that year after year more tons are hauled on Goodyear tires than on any other kind!

BUY and SPECIFY GOODYEAR -it pays!

ROAD LUG

For trucks that operate both OFF and ON the road, this dual-purpose tire is best. Tough construction and special tread design provide super-traction off the road—long, smooth mileage on the road.

HARD ROCK LUG

For tire-bruising, heavy-duty, off-the-road work, this super-rugged tire is tops. Its tough armored carcass and extra-husky lugs assure more wear, better performance no matter how tough the going is.

GOODYEAR

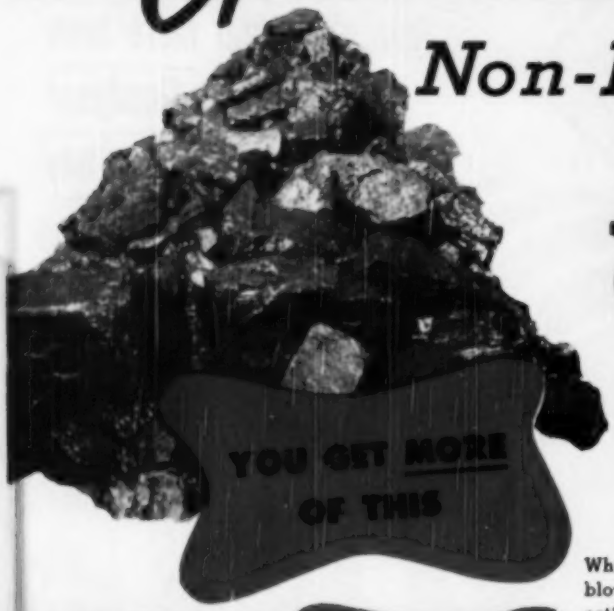
Trade Mark—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

Gently DOES IT

Non-Explosive

MINING METHODS

AIRDOX
CARDOX



Note the high percentage of fine sizes in this fall of coal. Typical with permissible explosives.

AIRDOX or CARDOX dislodges coal with a piston-like action that produces more loose coal and minimizes shatter cracks.

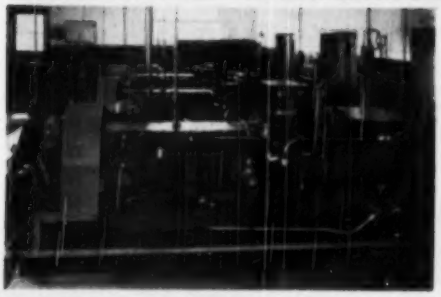
Treat your coal gently— it may be worth more than you know! Let's look at the facts:

When you replace the shattering, hammer-like blows of explosives with the gentle, heaving action of AIRDOX or CARDOX, you get more premium price coal in every ton mined. Specifically, you decrease the minus 2" coal by 10% to 15% and reduce the proportion of minus ¼" coal to an even greater extent. But your increased realization goes far beyond that.

Non-Explosive Mining Methods — AIRDOX or CARDOX — break down the face along natural lines of cleavage. Shatter cracks that cause progressively costly degradation are eliminated. Your coal retains its firm structure all the way from face to furnace — even under extensive mechanical handling, long distance shipment and rough handling in the dealer's yard. *Result: — better coal that's easier to sell.*

Add the factors of greater mine safety, easier loading, easier cleaning — and you can see why the most progressive and efficient mines, in greater numbers than ever before, are changing over to AIRDOX or CARDOX Non-Explosive Mining Methods.

. . . and pays a reward in GREATER REALIZATION from face to furnace



AIRDOX

AIRDOX at work! Each of these AIRDOX compressors (left) supplies enough high-pressure air to break approximately 750 tons of coal per 8-hour shift.

AIRDOX dislodges coal with compressed air. Its gentle heaving action shears the rib and top clean . . . rolls the coal forward in a loose pile for faster loading . . . reduces hazards of roof failure. It permits on-shift shooting in locations where mine safety laws prohibit use of explosives while men are in the mines. Crews can enter the working face immediately after the fall, enabling greatest possible use of the most modern mechanized equipment.

Equipping a mine to take advantage of the economy and safety features of AIRDOX requires practically no change in operating methods. High pressure air, supplied by one or more electrically driven compressors at the surface, is carried into the working sections of the mine through steel and copper tubing. AIRDOX Tubes are inserted into drill holes in the face. Under the remote control of an operator, they discharge compressed air to break the coal. Force is concentrated at the *back* of the drill hole, where it is most effective. There is no smoke, flame or fumes and very little dust. AIRDOX Tubes may be used over and over again.

Operating control valve which releases compressed air in AIRDOX Tube to dislodge coal.

which for you — AIRDOX or CARDOX?

Each offers you the benefits of greater realization, greater safety and more salable coal. Recommendations as to whether CARDOX or AIRDOX better suits your needs will be made after examination of all factors by one of our engineers. Ask for this free survey today. This may well be your first step toward maximum profits from your mining operations.

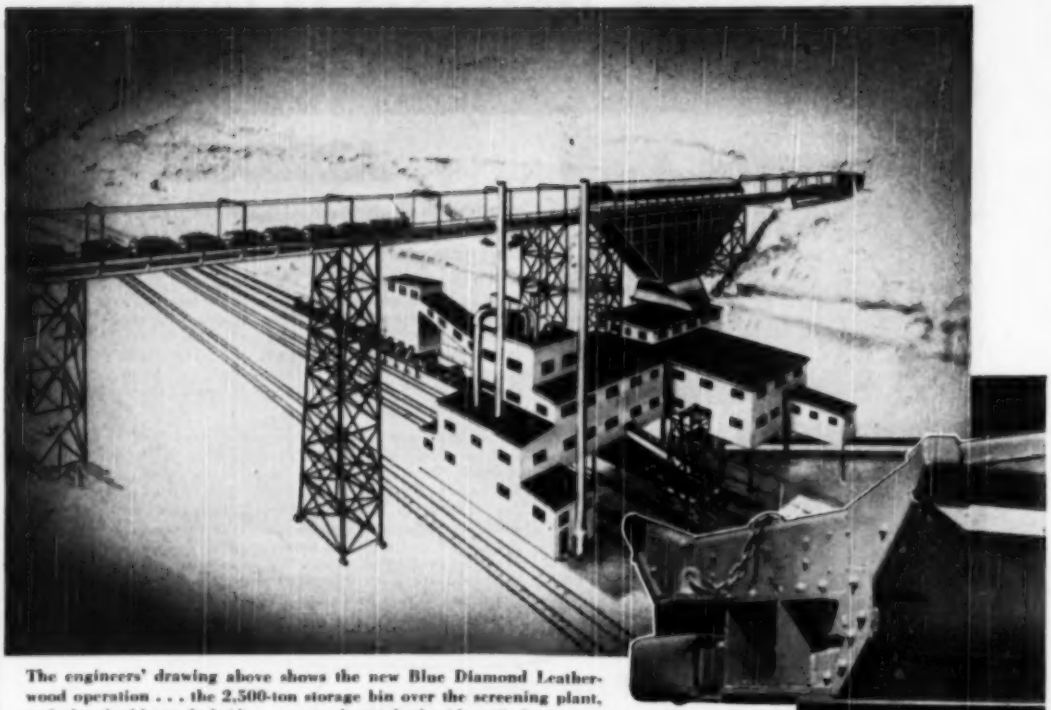
CARDOX

CARDOX utilizes the gentle but tremendously powerful force exerted by expanding carbon dioxide to dislodge coal. Method of application at the face is in general similar to that for AIRDOX. The CARDOX Tube containing carbon dioxide is inserted in the drill hole. Discharge is directed from a convenient crosscut. Discharge does not damage the CARDOX Tube. The Tube is simply returned to the surface for refilling in a small charging plant located at the mine.

In addition to the benefits it confers through greater realization, CARDOX offers unique safety advantages. It cannot initiate an explosion, will not support combustion. Carbon dioxide is a fast, effective fire extinguishing agent. In many mines CARDOX Tubes are featured as emergency fire extinguishers.

CARDOX CORPORATION • BELL BUILDING • CHICAGO 1, ILLINOIS

BLUE DIAMOND'S *Leatherwood..*



The engineers' drawing above shows the new Blue Diamond Leatherwood operation . . . the 2,500-ton storage bin over the screening plant, and the double-track bridge to portals on both sides of the gorge. It is one of the most outstanding structures of its kind in the United States . . . a design of beauty as well as maximum production efficiency. Roberts and Schaefer, Chicago, are the engineers and contractors.

S-D 1-2-3 "AUTOMATICS" IN SERVICE AT LEATHERWOOD

There are 140 12-foot, and 390 16-foot S-D 1-2-3 "Automatics," all new cars, in service . . . a total of over 500 cars. This is proof of the efficiency of S-D "Automatics" well known by a firm with years of experience using them.

For complete information on how S-D "Automatics" can step-up your production and cut haulage costs, write today!

This advertisement published with the permission of Blue Diamond Coal Co.

SANFORD-DAY
KNOXVILLE

.... one of the world's greatest coal producing ventures ... on the way to Greater Production

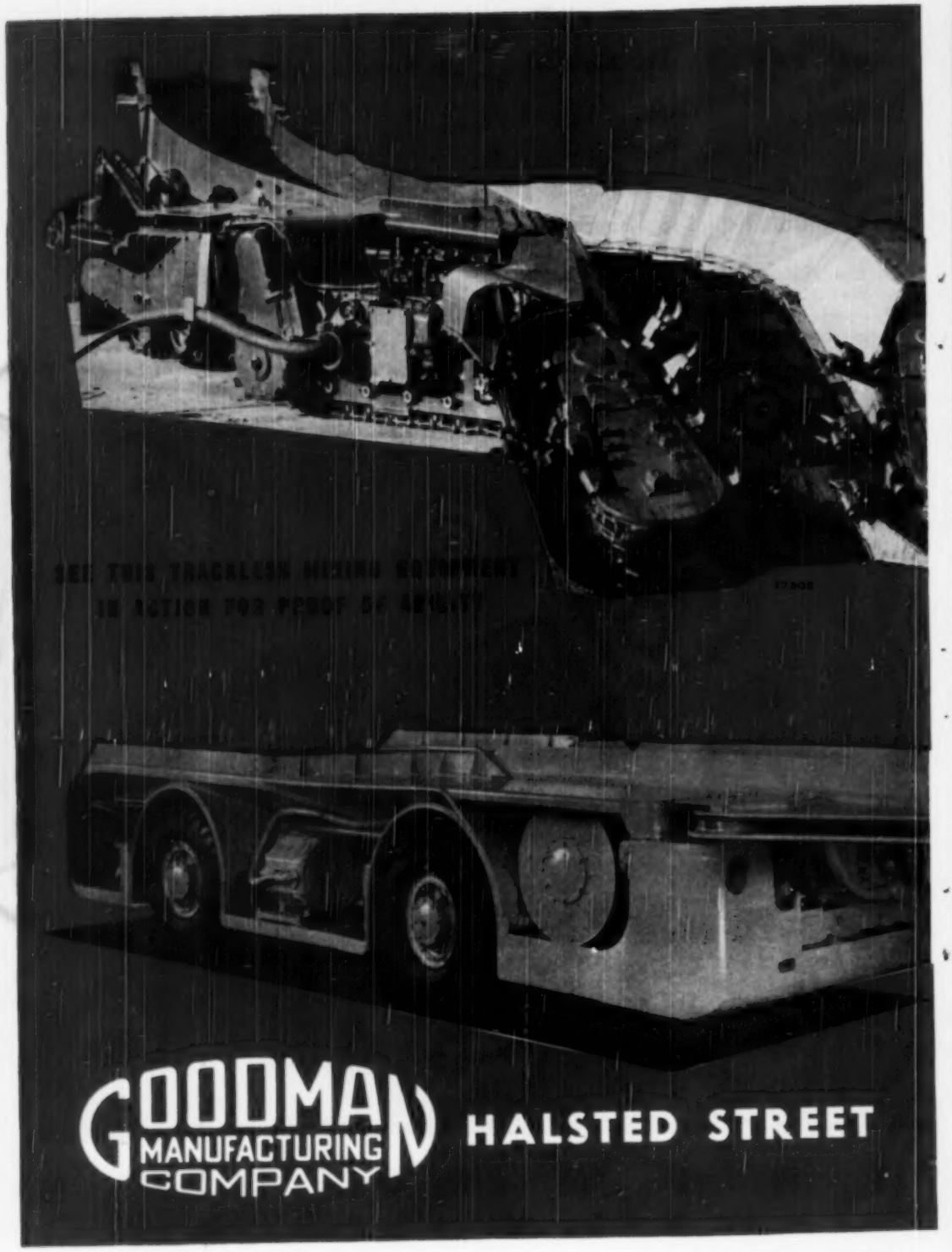
Operation of Blue Diamond's Leatherwood, Ky. Mine Starts With Over 500 New S-D 1-2-3 "Automatic" Drop-Bottom Cars!

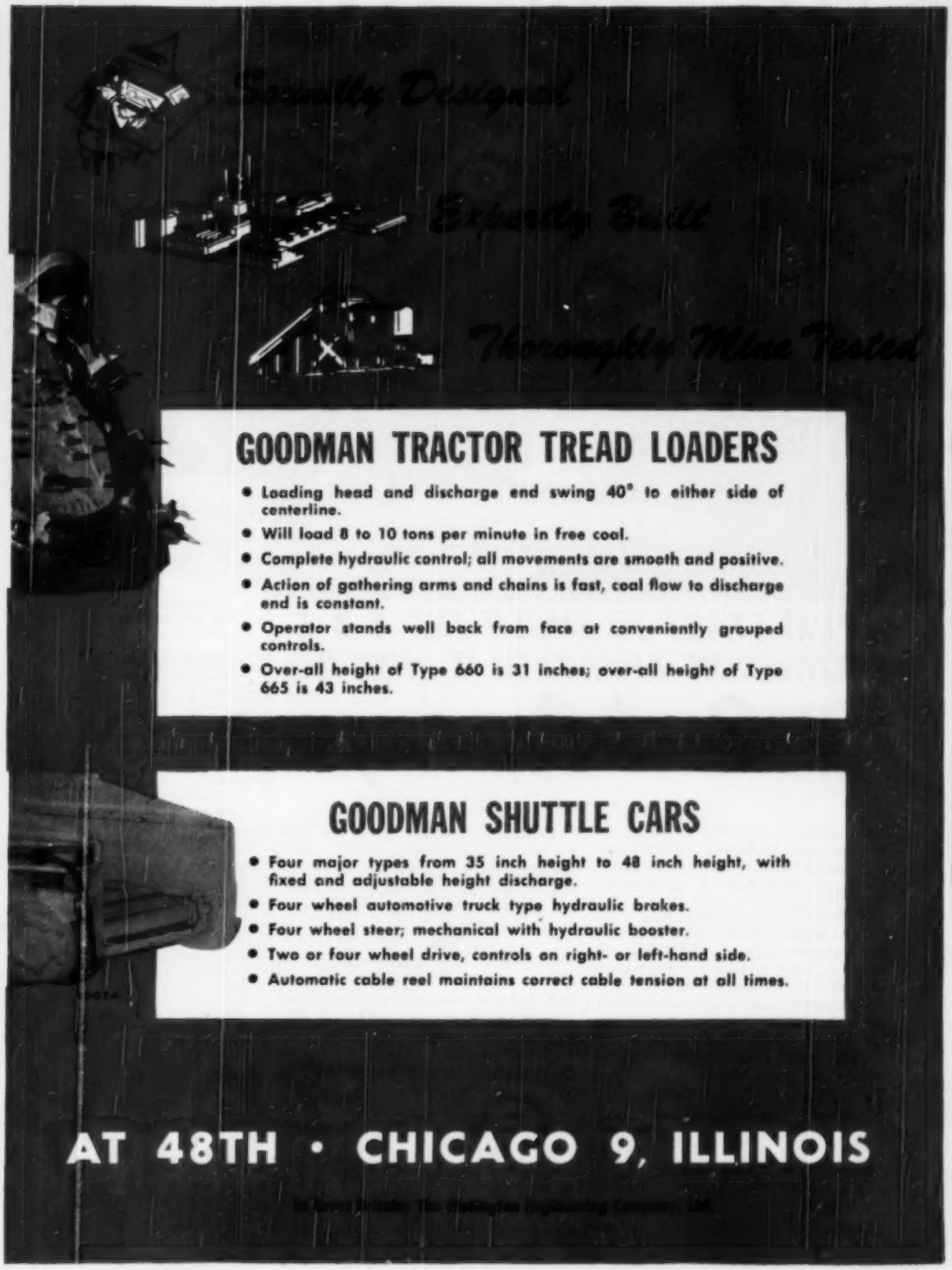
Blue Diamond Coal Company, well known as one of the coal industry's most progressive operators, has set its new Leatherwood mine capacity at 8,000 tons daily. A special feature of this new ultra-modern and efficient operation is the 2,500-ton storage bin built directly over the screening and cleaning plant. This storage bin permits three-shift operation of mine with only two-shift operation of screening plant because S-D 1-2-3 "Automatics" can fill the bin to track level.

Five hundred and thirty new S-D 1-2-3 "Automatics," like the one shown below, completely dust-sealed for safety and savings, serve Leatherwood's haulage requirements.

For record-making haulage — dumping-on-the-move . . . for low cost operation day-in and day-out, no other car can match the S-D 1-2-3 "Automatic" system of haulage in coal mining.

IRON WORKS
TENNESSEE


GOODMAN
MANUFACTURING
COMPANY
HALSTED STREET



GOODMAN TRACTOR TREAD LOADERS

- Loading head and discharge end swing 40° to either side of centerline.
- Will load 8 to 10 tons per minute in free coal.
- Complete hydraulic control; all movements are smooth and positive.
- Action of gathering arms and chains is fast, coal flow to discharge end is constant.
- Operator stands well back from face at conveniently grouped controls.
- Over-all height of Type 660 is 31 inches; over-all height of Type 665 is 43 inches.

GOODMAN SHUTTLE CARS

- Four major types from 35 inch height to 48 inch height, with fixed and adjustable height discharge.
- Four wheel automotive truck type hydraulic brakes.
- Four wheel steer; mechanical with hydraulic booster.
- Two or four wheel drive, controls on right- or left-hand side.
- Automatic cable reel maintains correct cable tension at all times.

AT 48TH • CHICAGO 9, ILLINOIS

FROM START TO FINISH THE A & G ENGINEERING APPROACH IS DIRECTED TO · · · Cost Savings

This organization has been functioning for thirty-nine years in applying scientific knowledge, impartial judgment, and practical experience to the modernization of coal properties.

The adaptation of machinery in itself is not sufficient to assure efficient operation. The unbiased experienced thinking of A&G engineers assures the correct selection of equipment—the elimination of "bottlenecks"—the reduction of down-time—the proper rate of amortization—the proper ratio of investment to production per man—these mining men also dig out and eliminate certain costly production factors which at present are hidden.

In serving our clientele on a cost and fixed fee basis we are giving them the best possible deal in keeping the total cost in lowest possible figures. Thirty-nine years of doing business has proved this to be fundamentally sound procedure.

Throughout, the A&G engineering approach is a professional one. Eighty per cent of our work has come from previous clients which included assignments from producers of both large and small tonnages.

For detailed information we invite you to write.

Scope of Services

- Design and construction of new plants and their various units.
- Organization, operation, and management of mines.
- Below ground modernization and mechanization.
- Reconstruction, revamping, or improvement of existing plants.
- General consulting work regarding power, equipment, operation, and various mining problems.
- Valuations for financing, fire loss, taxation purpose — reports and appraisals.

We work with undivided responsibility to you on a cost and fixed fee basis. We are not hampered by any connections which might prejudice the true professional engineering approach to your problems.

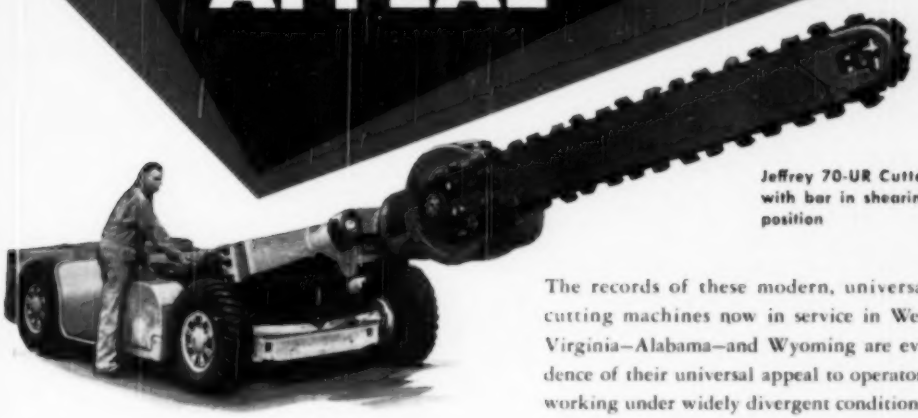
☆

ALLEN & GARCIA COMPANY

CONSULTING AND CONSTRUCTING ENGINEERS

332 S. MICHIGAN AVE., CHICAGO 4, ILL. • 120 WALL ST., NEW YORK 5, N. Y.

A UNIVERSAL CUTTER *with* UNIVERSAL APPEAL



Jeffrey 70-UR Cutter with bar in shearing position

The records of these modern, universal cutting machines now in service in West Virginia—Alabama—and Wyoming are evidence of their universal appeal to operators working under widely divergent conditions. Again, Jeffrey is living up to its reputation for building dependable, cost-saving equipment . . . this time in the field of trackless mining.

JEFFREY

Jeffrey 70-UR Cutter with bar in top cutting position

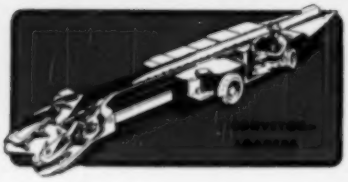
Call in a Jeffrey Mining Engineer for help on your cutting and other mining problems . . . take advantage of Jeffrey experience, engineering "know-how" and complete manufacturing facilities.

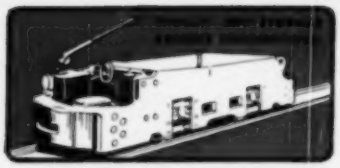
70-UR

Jeffrey 70-UR Cutter with bar in bottom cutting position

(Patented. Also licensed under E. C. Morgan Pat. 1,953,325)

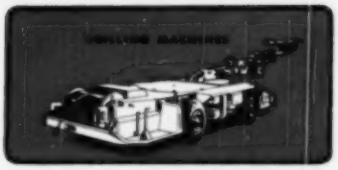
JEFFREY 70-UR
UNIVERSAL CUTTER
This Jeffrey 70-UR Universal Cutter, mounted on rubber tires, is doing a good job in a West Virginia mine. Full hydraulic controls provide ease of operation for all adjustments and feeds. Tramming and cable reel operation are also hydraulic.
WHEREVER COAL IS MINED YOU

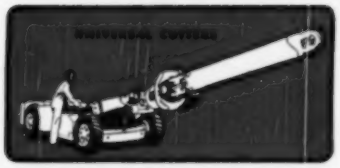


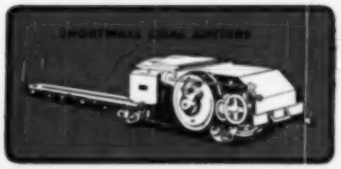


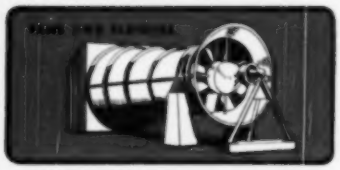
JEFFREY

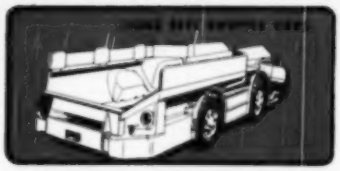
EQUIPMENT FOR COAL MINES

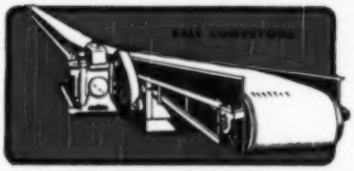












THE JEFFREY MANUFACTURING COMPANY

Established 1877

General and Export Sales Offices

COLUMBUS 16, OHIO, U. S. A.

DISTRICT SALES OFFICES

BALTIMORE 2, MD.
Munsey Bldg.

BECKLEY, W. VA.
403 City Ave.

BIRMINGHAM 3,
2210 Third Ave., N.

BOSTON 16,
38 Newbury Street

BUFFALO 2,
Jackson Building

CHICAGO 1,
Bell Building

CINCINNATI 2,
Carew Tower

CLEVELAND 15,
1560 Henna Bldg.

DENVER 2,
Ernest & Cranmer Bldg.

DETROIT 13,
5808 St. Jean Avenue

HARLAN, Kentucky

HOUSTON 2, TEXAS
City National Bank Bldg.

JACKSONVILLE 2,
Barnett Bank Building

MILWAUKEE 2,
735 N. Water Street

NEW YORK 7,
30 Church Street

PHILADELPHIA 3,
Broad St. Station Bldg.

PITTSBURGH 22,
Oliver Bldg.

SALT LAKE CITY 1,
101 W. 2nd South St.

ST. LOUIS 1,
Railway Exchange Bldg.

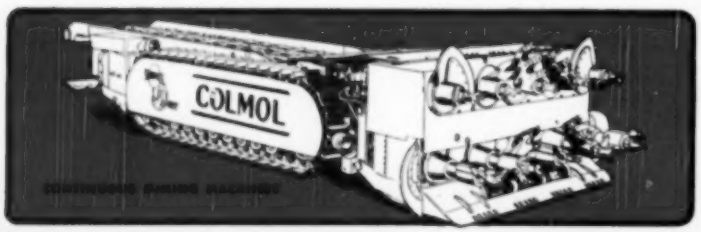
SCRANTON 3,
122 Adams Avenue

SERVICE STATIONS

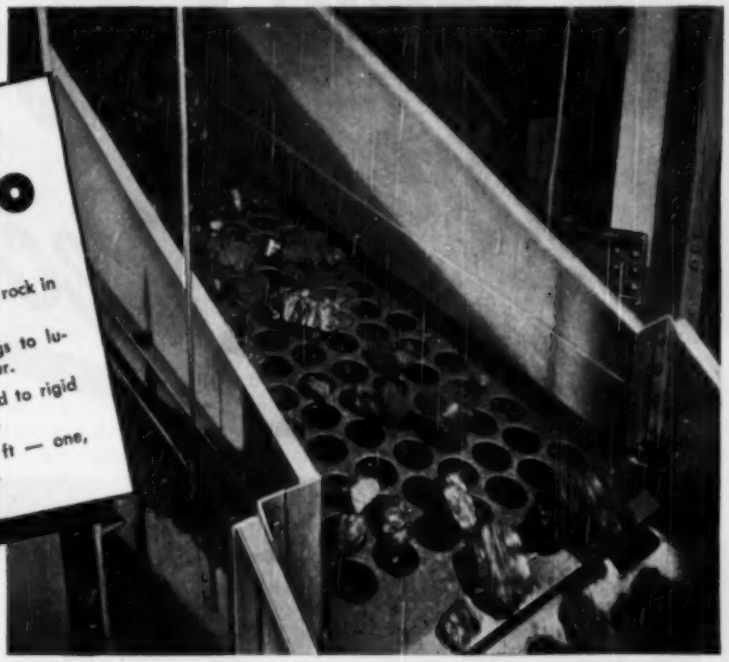
BIRMINGHAM • PITTSBURGH • JOHNSTOWN • SCRANTON • MT. VERNON, ILL. • HARLAN, KY.
In West Virginia: BECKLEY — CABIN CREEK — LOGAN — MORGANTOWN — WELCH

FOREIGN PLANTS

JEFFREY MANUFACTURING CO. LTD., Montreal, Quebec
BRITISH JEFFREY-DIAMOND LTD., Wakefield, England
JEFFREY-GALION (PTY.) LTD., Johannesburg, South Africa



Scalps 400 tph ROM Coal



HEAVY-DUTY RIPL-FLO SCREEN

- Handles ROM coal and rock in largest sizes.
- Has only two bearings to lubricate instead of four.
- Screen surface bolted to rigid flat surface I-beams.
- Sizes 4x5 to 6x16 ft — one, two or three decks.

HERE, AT Enoco Collieries, Bruceville, Indiana, this 5x10 ft Extra Heavy Duty *Ripl-Flo* vibrating screen handles 400 tons per hour, scalping ROM coal.

The heavy perforated top deck has 6-in. round openings, with oversize going to a breaker and minus 6-in. product to wash boxes or raw coal classifying screens.

Owners are pleased with performance . . . and with the negligible amount of maintenance required.

Heavy Duty *Ripl-Flo* screens are made of high tensile steel, and are of all-welded construction, "stress-relieved" to eliminate strain around welds. Replaceable liner plates above the deck protect the side plates from wear.

The Allis-Chalmers representative in your area will be glad to show you how A-C vibrating screens may fit into your operations profitably. Call him, and write for **Bulletin 25B2680A**, describing all Allis-Chalmers equipment for coal.

A-3129

ALLIS-CHALMERS, 968A SO. 70 ST. MILWAUKEE, WIS.

AVAILABLE WITH RUBBER FLOOR MOUNTINGS

The entire line of *Ripl-Flo* screens can be obtained with rubber mountings instead of cable suspension.

ALLIS-CHALMERS

Ripl-Flo and Texrope are Allis-Chalmers trademarks.

Sales Offices in Principal Cities in the U. S. A. Distributors Throughout the World.

Motors

Controls

Texrope Drives

Vibrating Screens

Crushers

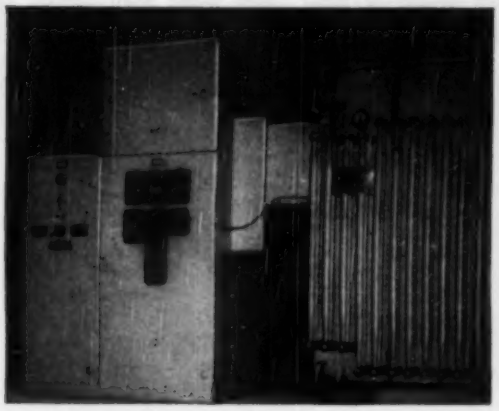
Kilns, Coolers, Dryers

Island Creek saves 3 ways with G-E Rectifier!

Mercury-Arc Rectifiers
–to cut mining costs!

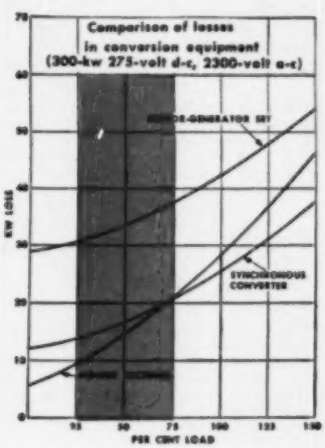
Installation costs cut! In installing this G-E 300-kw mining-type rectifier, Island Creek Coal Co. saved an estimated $140 by eliminating special foundations, cable ducts, etc. needed with rotating converters. Completely automatic in operation, G-E rectifiers can be placed in remote locations, without constant attendance. Use of shorter d-c lines is made possible, and voltage drop is reduced.

General Electric mining-type rectifier at Island Creek Coal Co., Holden, W. Va., saves an estimated $220 power cost and $250 maintenance cost every year—plus installation savings of $140!



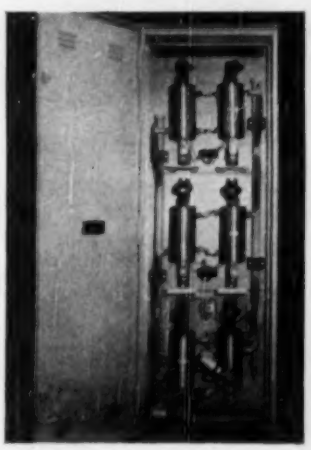
Personnel protected! To minimize the possibility of personnel coming into accidental contact with live parts, all units are deadfront, completely metal enclosed. Shown above are incoming a-c switchgear section and part of power transformer section. (At right: Rest of power transformer section, plus rectifier section and d-c switchgear section.)

Downtime reduced! A G-E rectifier has no major rotating parts to wear and interrupt service for replacement or cleaning. Protective devices automatically trip it off in case of a fault, minimizing downtime caused by damage to equipment. With full voltage at the face, mining machines operate more efficiently, with fewer interruptions.



Power costs cut! (left) Average mining load varies from 25 to 75 per cent of the conversion equipment's rating. In this range, as chart shows, power rectifiers have higher conversion efficiency than rotating machines. Island Creek Coal Co. estimates power savings at $220 annually from one G-E 300-kw rectifier alone.

Maintenance costs cut! (right) Steel panels isolate firing circuits from tubes and water cooling system, protecting electrical components. Rectifier unit has easily accessible parts, needs only an infrequent tube replacement and addition of water in the cooling system. Island Creek Coal Co. calculates its maintenance savings at $250 per year on one G-E rectifier.



SERVICE-PROVED! Over 250 G-E sealed tube mercury-arc rectifiers for mining service, in both stationary and portable types, are now in use throughout the country, some for more than 12 years. For more detailed information, write for new bulletin GEA-4047, or check with your nearest G-E office. *Apparatus Dept., General Electric Company, Schenectady, N. Y.*

GENERAL ELECTRIC

663-10

WHERE PROFITS

"CAT" EQUIPMENT SPEAKS YOUR

MINING profits can be made in overburden removal as well as in the pit; in the efficiency of the equipment as well as in the skill of the crews. In a "Caterpillar" DW10 Tractor-Scraper team like the one shown opposite you get a stripping outfit that has no superior in high-speed earthmoving. It contributes to your profit during every step and hour of use – through its speed and capacity (up to 24.5 miles per hour with as much as 11 heaped yards); through operating economies resulting from matched design and low fuel consumption; through minimum maintenance expense due to rugged construction and precision manufacture. Taken together, these advantages add up in substantial profits from lower costs per cubic yard of earth moved, more yardage per hour, more lifetime hours per machine.

Consider the DW10 alone – one of the greatest successes in wheel tractor history. Look at the work-capacity features and the honest-to-goodness quality "Caterpillar" has built into it. (Nothing is too trivial or "too much trouble" to make these products the finest and most profitable investments of their kind.) Below are a few points of evidence.

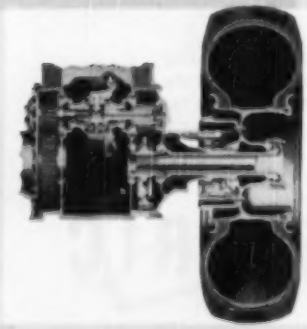
CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS

Profit IN STRENGTH

The DW10 is built to handle big loads. Main frame—composed of two strong box-welded members securely fastened to transmission case—is 12 inches deep at the rear, where the load is carried. The rigid structures have several times the resistance to twisting strains that channel sections of the same size afford. Great frame strength and ruggedness provide a firm foundation for the components of this powerful wheel tractor.

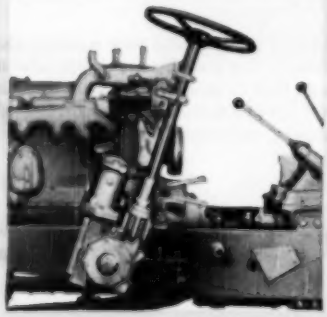
Profit IN QUALITY

To withstand the demands of continuous hard work, the final drive assembly of the DW10 is rugged yet finely engineered. It embodies precision-built bevel gears, full floating rear axle, crown-shaved "Hi-Electro" hardened final drive gears, optional gear ratios, welded steel transmission case, cast steel final drive housing, air-operated brakes. Sound construction!



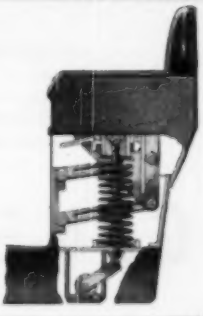
Profit IN EASE OF OPERATION

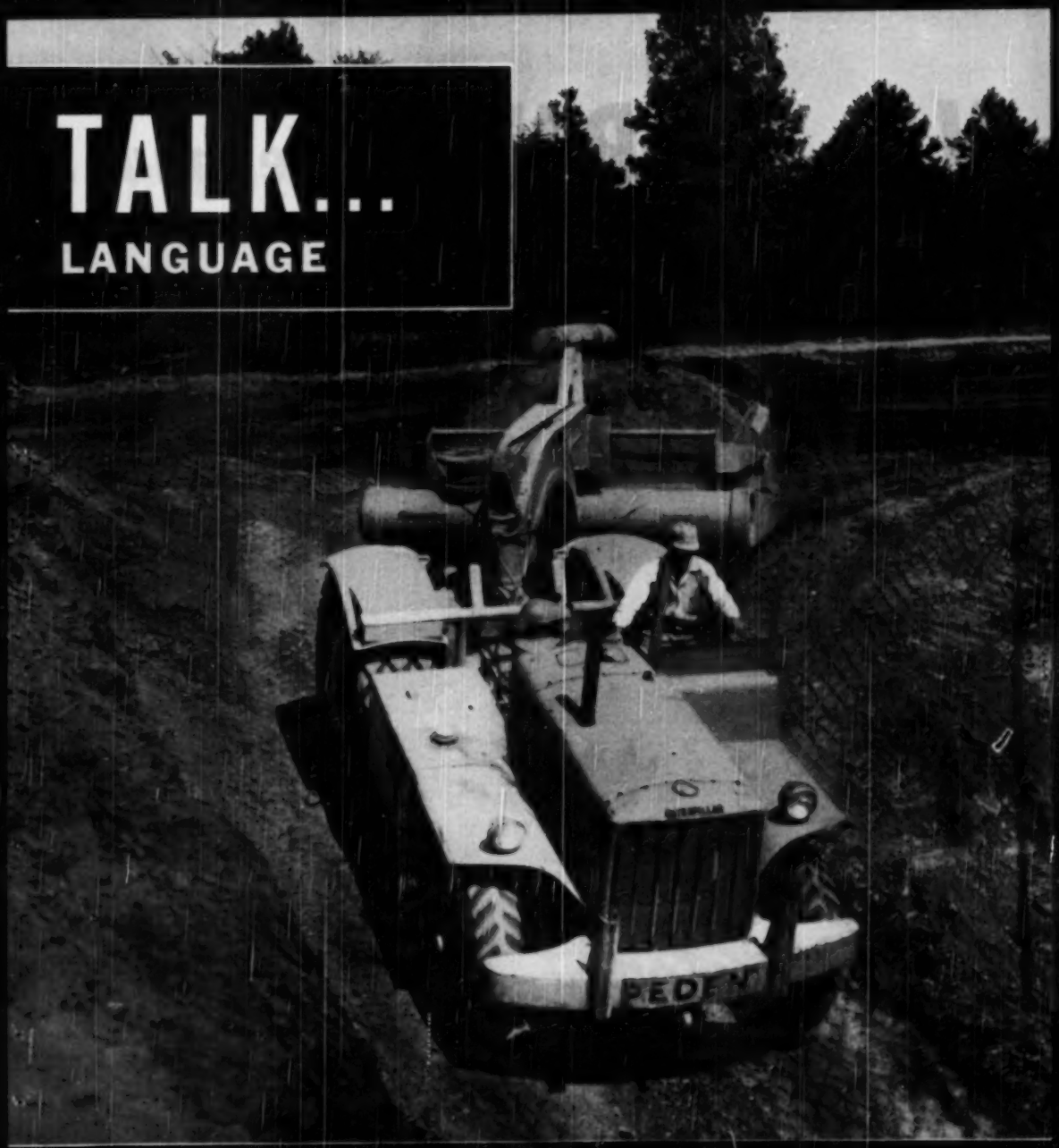
A hydraulic booster gives the DW10 passenger-car steering ease and absorbs shock loads when taking rutted roads and downhill runs. Yet the steering system can be operated independently of the booster feature. A fine safety feature in the highest sense!



Profit IN OPERATOR COMFORT

The DW10 is built for easy, safe driving. Besides finger-tip steering, excellent visibility, handy controls, and minimum "stretch," the DW10 provides easy riding through airfoam rubber seat cushion *plus* seat springs that are adjustable to operator's weight.





CATERPILLAR

DIESEL ENGINES · TRACTORS
MOTOR GRADERS · EARTHMOVING EQUIPMENT

SEE the NEW MOVIE FILM of "CAT" DW10s in ACTION

at your dealer's. A full-color picture packed with interest and convincing profit-making performance.

NO-TURN shuttle haul..

Dumptors®

On every haul cycle, Koehring fast-shuttling Dumptors eliminate slow turns — at the loading unit, at the dumping point, on sharp, "zig-zag" grades. They gain more productive haul time, because Koehring constant-mesh transmission gives the same 3 fast speeds forward and reverse. Here's how much no-turn shuttle operation can increase your production:

SAVE TURN TIME GAIN HAUL TIME

By eliminating only 2 turns on a 1,000' haul, time studies prove that Dumptors can save 30 seconds every round trip, and increase hourly yardage output over 10% per unit. What's more — fast, easy spotting and 1-second gravity dump keep production high.

Remember, too — top hauling efficiency also means increased shovel output. For double profit protection, team fast-shuttling Dumptors with Koehring heavy-duty excavators. Four sizes: ½-yd., ¾-yd., 1½-yd., and 2½-yd.

KOEHRING COMPANY
MILWAUKEE 16, WISCONSIN
Subsidiaries: JOHNSON • PARSONS • SWIL-MIX

It will pay you to get complete facts from your Koehring distributor. Call him NOW.

8/50

. in open pits or underground

In confined underground operations, Dumpster spots fast, close to shovel . . . no need to turn, zig, flaunt. 5' x 3' body permits loading over either end or sides. Shovel operator has easy-to-hit target, and short swing. Excavator shown above with Dumpster is a Keeling ¾-yard 304.

At dumping location there's no slow jockeying around in crowded passageway. Dumpster drives up to conveyor, body forward . . . operator hits body release lever . . . gravity dumps 6-yard load in 3 seconds, and Dumpster is ready to head back for next load, without turning around.

On surface shuttle haul, even underground units to surface another, loaded Dumpster leaves narrow tunnel in the same travel position as it entered. Heavy-duty, constant-mesh transmission gives same fast speeds in either direction. Dumpsters climb 20% grades fully loaded.

There's no unproductive turning time . . . no waiting for slow body hoists. Gravity dump never balks . . . never wears out . . . eliminates body hoist mechanism. Dumpsters also save costly spring maintenance with one big double-wall chassis spring on rear-to axle.

Made for each other!

... Like ROCKMASTER Split-Second Detonators and ATLAS Explosives

Like ball and bat, ROCKMASTER split-second detonators and Atlas explosives just naturally *go together!* And fitting like a *glove* with them is the method of loading, tying all together with a *system.*

Gear the *right* choice of these famous Atlas explosives with the *right* combination of the 16 available Rockmaster split-second detonators—add the proper balance of drill pattern and blast-hole loading—and you have the true ROCKMASTER BLASTING SYSTEM. Here's the original split-second delay blasting method . . . the system that has given such outstanding results in terms of better breakage, better control over throw, and minimum noise and vibration.

What you want to accomplish on a particular job controls the choice of detonators, the drill pattern, and which of these well-known Atlas explosives is best suited to the job:

GIANT GELATINS
For all but the most severe water conditions. High strength per pound—shattering action.

GELODYNS
Exceptionally economical to use where water conditions are not severe.

ATLAS EXTRA DYNAMITES
Excellent all-purpose explosive for outdoor work.

AMODYNS
High cartridge count, economical explosives for comparatively dry conditions.

APEX
Especially formulated and packed for quarrying and stripping. Excellent for large-diameter blast holes under most conditions. Available in 8 strengths—low, medium or high velocity.

COALITES
Permissible explosives. Available in variety of strengths and velocities to give desired lump sizes under widely different conditions.

Your Atlas representative will be glad to show you how these and other Atlas developments will help give you top explosives performance. Write for Atlas Explosives Catalog and ROCKMASTER *"16" booklet.*

ROCKMASTER, GELODYN, AMODYN, APEX, COALITE: Reg. U. S. Pat. Off.

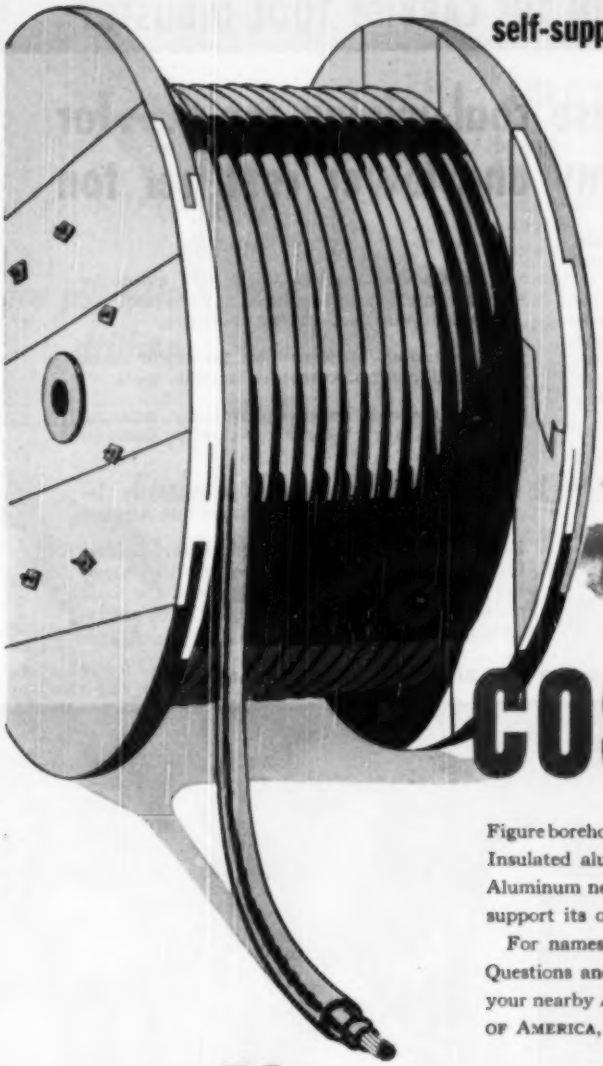
ATLAS EXPLOSIVES "Everything for Blasting"

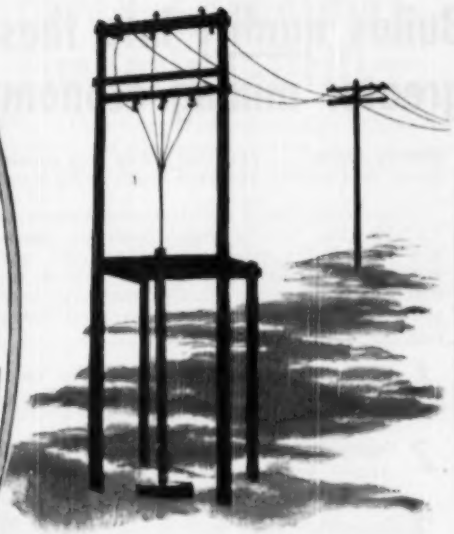
CHEMICALS ATLAS EXPLOSIVES

ATLAS POWDER COMPANY, Wilmington, Del. • *Offices in principal cities* • *Cable Address—Atpowco*

Aluminum borehole cable

self-supporting without reinforcement...





costs less

Figure borehole cable both ways—in aluminum and in copper. Insulated aluminum costs *far* less than *armored* copper. Aluminum needs no supporting armor because it can easily support its own light weight in boreholes of great depth.

For names of manufacturers and copy of "Installation Questions and Answers on Alcoa E.C. Aluminum," phone your nearby Alcoa sales office or write ALUMINUM COMPANY OF AMERICA, 1787J Gulf Building, Pittsburgh 19, Penna.

Insulated **Aluminum Conductors**

ALCOA

of ALCOA E.C. ALUMINUM are made by leading manufacturers

CARBOLOY

THE GREATEST NAME IN THE CARBIDE TOOL INDUSTRY

Builds quality into these coal-mining tools . . . for greater mining economy and lower cost per ton

Quality counts . . . and that's why you should count on Carboloy for your coal-mining tools!

These tools, tipped with Carboloy Cemented Carbide—*the hardest metal made by man*—are backed by more quality features and services than most other carbide tools on the market. Here are the features that have been proven by actual field tests to spell lower cost per ton of coal for you:

1. **Continuous grade improvement**—to meet metallurgical development problems, rather than changing grades.
2. **Engineering and research**—the nation's largest and most complete facilities devoted to carbides.
3. **Test-guaranteed quality**—backed by 29 rigid quality tests to meet the most exacting requirements of industry.
4. **Unequalled service**—Carboloy's extensive technical experience available to help you with your coal-mining problems.
5. **Production facilities**—the finest for mass production of cemented carbide tools.
6. **Performance record**—proved by amazing case history records reported by users in industry.
7. **Fast delivery**—through strategically located distributors, for immediate service.

For greater performance, for greater quality, for greater coal-mining economy—it's Carboloy right down the line! Read about the tools on the opposite page. They're Carboloy's winning bid for better coal-mining bits!

Carboloy Company, Inc., 11120 E. 8 Mile Blvd., Detroit 32, Michigan

FOR LOWER DRILLING COST PER TON

for pin hole drilling

Improved Carboloy Pin Timbering Drill—

Fast, easy drilling in hard slate, shale and laminated limestone. Extra dividends in reduced equipment costs and handling time. Carboloy's Pin Timbering Drill offers you this, and more, too.

This improved drill is tipped with Carboloy Cemented Carbide, *the hardest metal made by man.* It assures maximum speed in medium roof drilling, and develops faster drilling speed than pneumatic methods. Check these points: improved flute design, removes cuttings faster; alloy steel body, for greater strength; plus a carbide tip that will drill *more* holes.

Carboloy's Improved Auger Drill Bit

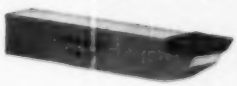
— for faster, easier drilling

Unbeatable—you'll slash coal drilling costs right and left with this improved auger drill bit. Ideal for post, mounted and push drills. Look at this:

- Maximum clearance and relief angles permit freer, faster cutting.
- Improved spiral prevents packing of coal cuttings.
- Uniform high-quality carbide throughout entire tip. Assures longer bit life.
- Long tips of Carboloy Cemented Carbide permit many more regrinds.

PLUS • Forged alloy steel shank—heat treated.

Carboloy's Improved "Finger Bit"



— for strip, underground mining

Ideal for use in hard-to-take-hold-of medium ground! Provides real gouging action. Fits all standard auger drill heads using ½" bits. Check these plus values:

- Faster cutting due to larger clearance angle on shank.
- Drills more freely.
- Less pressure required.
- Uniform high quality throughout entire tip. Assures longer drill life.

PLUS • Forged alloy steel shank—heat treated.

Carboloy's Mining Machine Bit—

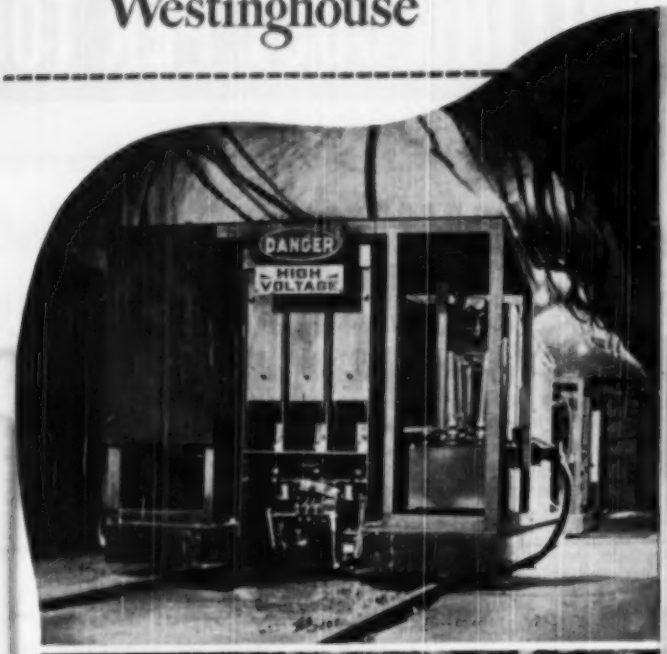
with 8 important advantages

Not only do you get top carbide quality, top performance and top efficiency, but you get these 8 big plus advantages with this Carboloy mining machine bit:

- Shank level with insert, for free flow of coal.
- Less shank steel to grind, yet adequate insert support.
- Less carbide to grind; faster grinding, greater tip economy.
- Smaller point affords less power consumption.
- Forged alloy steel shank resists bending, permits set screw clamping.
- No shoulders; set to any gauge size within range of uses.
- Maximum hold through combination of braze and mechanical holding.
- Approximately 50% greater thickness of insert at cutting edge.

CARBOLOY®
CEMENTED CARBIDE
FOR GREATER MINING EFFICIENCY

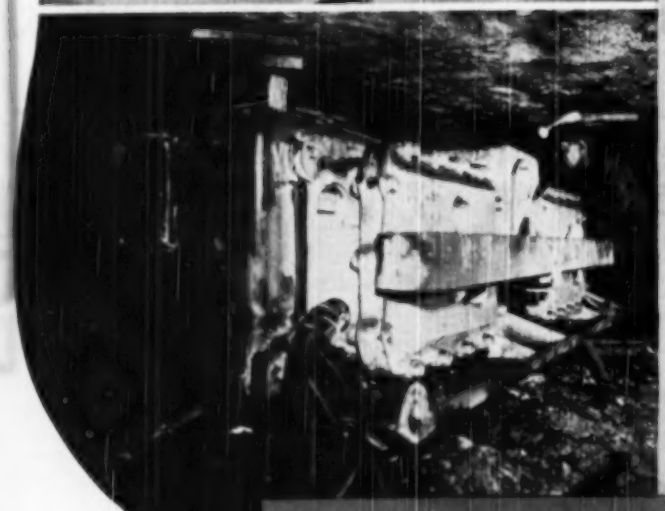
YOU CAN BE **SURE**.. IF IT'S
Westinghouse



FOR D-C OPERATIONS...

Ignitrons provide most economical power

Westinghouse-developed Ignitron Rectifier Substations offer outstanding advantages of portability, efficiency and low maintenance for main power supply in d-c mines. Mounted in three, low mine cars, they're readily portable so that power supply can be kept close to the work. (Stationary units are also available for surface operations.) High Ignitron efficiency saves about $5,000 per year in power costs alone in a typical 3000-kw operation. Maintenance is ⅔ that of M-G set. For more information write for B-4658.



FOR A-C OPERATIONS...

The safest transformer ever built

Here's the obvious answer to a-c mine power supply—the only Power Center actually designed for underground coal mining service. Skid it right up to the face, connect it and forget it. The Westinghouse Mine Power Center contains nitrogen-cooled transformer *with fireproof insulation* and feeder breakers in a compact, lightweight, easy-to-move unit only 25" high. There are no liquids to maintain. It is *completely explosion-proof*, and needs no special ventilation. Write for C.S. 48-580.

Westinghouse
EQUIPMENT FOR
THE MINING INDUSTRY

Is poor power supply wasting your money?

Efficient Mining Demands Adequate Power Where You Need It

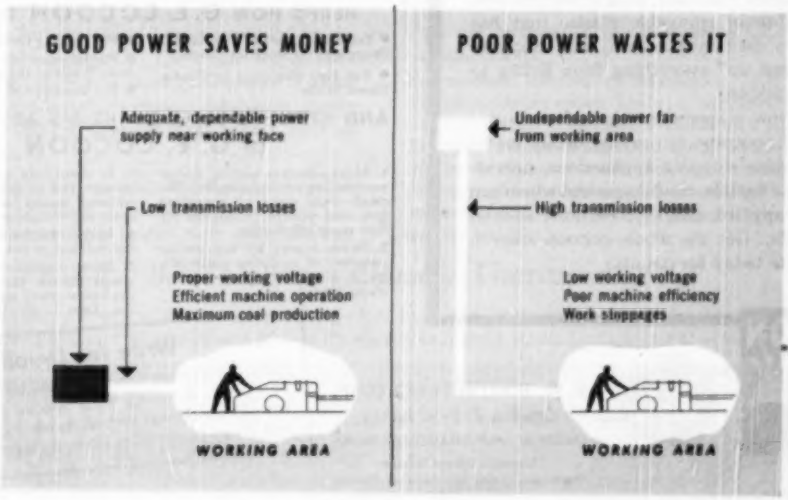
Here's how to avoid the costly consequences of power supply that's inadequate, undependable, or too far from the working face. With Westinghouse *mine-designed* Power Centers and Substations you do away with high transmission losses, low-working voltage, poor machine efficiency, overheated motors, work stoppages, high maintenance costs.

ANSWERS: WESTINGHOUSE MINE POWER CENTER, IGNITRON SUBSTATION

Westinghouse Ignitron Rectifier Substations for d-c mines and Mine Power Centers for a-c operations give you the power you need. Their operation is dependable and automatic. They're available in a wide range of ratings to deliver the volume of power needed. And most important, both are readily portable—compact, lightweight, easy to install and connect—so that power supply can be kept near the working face. This is essential. For example, by moving its power supply one mile closer to the working face, one new mine boosted production 23%—*with no increase in men or equipment.*

CHECK YOUR OPERATION; LET WESTINGHOUSE HELP

Make sure you're not wasting money that a good power supply would save. Study your operation. Westinghouse Mine Specialists will be glad to help—with no obligation, of course. Just call your nearby Westinghouse office. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa. J-94847



NEW EFFICIENT MINE STOPPING METHOD
USES AMAZING G. E. SPRAYABLE PLASTIC FILM

COCOON®

You've heard about our original COCOON—it's the tough, waterproof, acid-proof sprayable plastic that has been used by the Army and Navy to "wrap up" everything from B-29's to battleships.

Now a special version of COCOON—G. E. COCOON, is proving highly useful in mine stopping applications, providing a flexible, continuous seal which can be applied quickly, without special skills. Get the whole COCOON story—write today for details.

HERE'S HOW G. E. COCOON IS USED

- For Temporary or Permanent Stoppings on Brattice Cloth
- For Dry Concrete or Cinder Block Walls
- For Sealing Overcasts
- For Repairs of Cracked Concrete Walls or Broken Overcasts
- For Sealing Off Mine Fires

AND HERE ARE SOME OF THE *BIG* ADVANTAGES OF G. E. COCOON

1. More effective sealing makes ventilating systems more efficient—cuts costs of operating fans and pumps. Controls air flow more efficiently.
2. Saves money by facilitating recovery of stopping materials. (G. E. COCOON can be reused many times).
3. Is absolutely non-toxic—can be sprayed in confined areas without masks using standard spraying equipment.
4. Acid and moisture-proof; will not mildew or rot.
5. Spray equipment includes 2 wheel mobile compressor with explosion-proof motor. Wt. 275 lbs. Dim. L. 26", W. 17", H. 24".

COCOON it

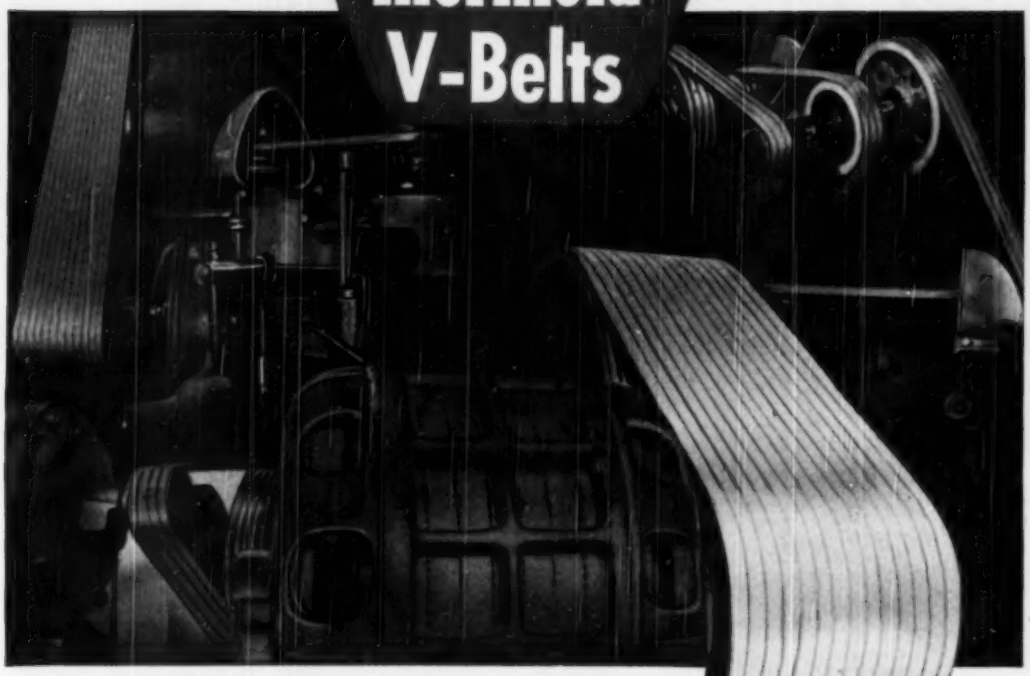
Whiz

R. M. HOLLINGSHEAD CORP.
Camden 2, New Jersey
LEADER IN MAINTENANCE CHEMICALS
Canadian Offices: Toronto
Warehouses: Dallas, San Francisco, Chicago

Write for Details

We'll gladly send you recommendations on the use of G. E. COCOON for your special problems, and we will train your picked employees in our Camden spray booth to build G. E. COCOON stoppings.

Specify Thermoid V-Belts



Thermoid V-Belts... Built to Last Longer ...Harness Industry's Horsepower!

From the smallest fractional horsepower size to the largest multiple V-Belt . . . Thermoid top-quality serves the needs of every industry. Thermoid V-Belts mean longer-than-average wear, maximum power transmission without slippage and lowest over-all operating costs.

Thermoid V-Belts are specially impregnated to withstand excess moisture . . . abrasion . . . acidity . . . all those elements that hasten belt deterioration. *They are prestretched to insure perfect operation without adjustments.*

For smooth, efficient performance . . . for ability to absorb repeated shock loads . . . for lowest cost per hour . . . specify Thermoid V-Belts. Call your nearest Thermoid Distributor today. He has a complete range of sizes available to meet your requirements. And for your special belt problems, Thermoid Field Representatives are always available to help you select the right belt for the job.

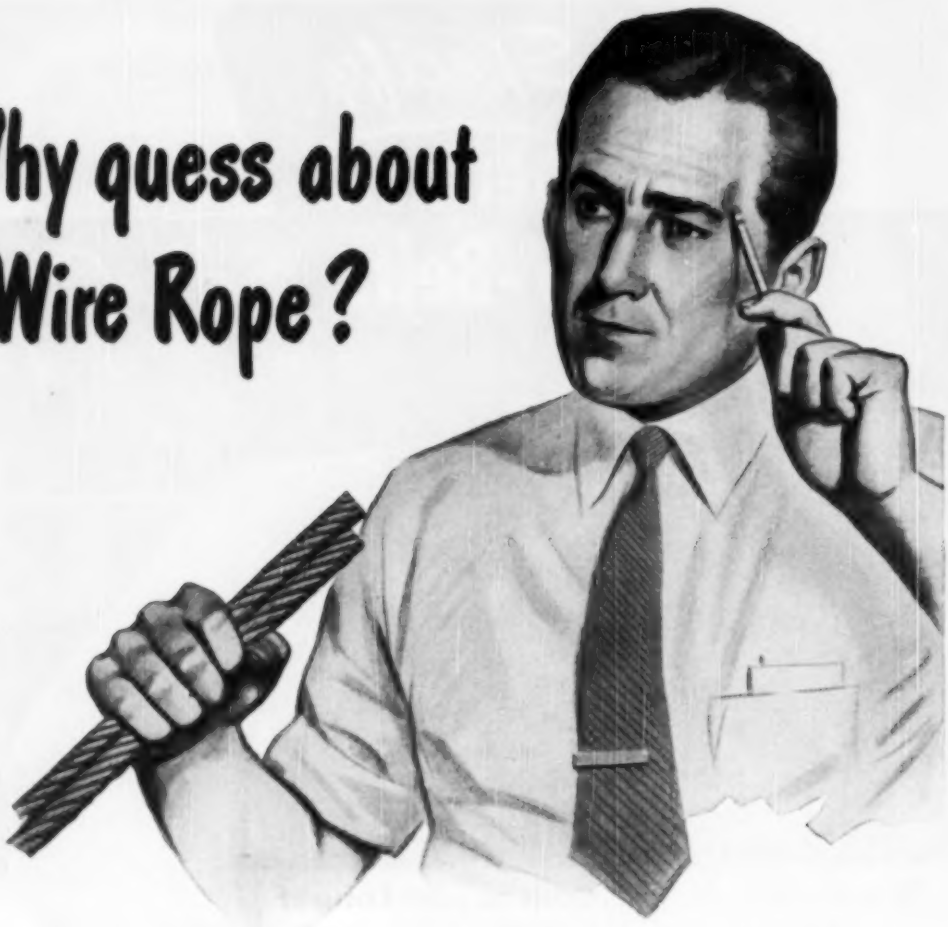
It will pay you to *Specify* Thermoid

Thermoid Quality Products: Transmission Belting • F.H.P. and Multiple V-Belts • Conveyor Belting • Elevator Belting • Wrapped and Molded Hose • Molded Products • Industrial Brake Linings and Friction Materials.

Thermoid Company

Main Offices and Factory • Trenton, N. J., U. S. A.
Western Offices and Factory • Nephi, Utah, U. S. A.
Industrial Rubber Products • Friction Materials • Oil Field Products

Why guess about Wire Rope?



Let's call this a picture of a man who used to guess about his wire rope. He often guessed wrong. Was never really sure which brand was costing him the most—and the least.

Now he's keeping records. A Bethlehem man showed him the value of knowing what he was actually getting for his rope dollar. Showed him that the true cost of wire rope is the cost per unit of work—per ton-mile, cubic yard of rock moved, etc. Showed him how easily records could help him determine this cost per unit of work.

It's something Bethlehem strongly recommends, for purchase price alone is a false yardstick of rope value and rope economy. Frankly, we welcome any steps that will help users compare brands of rope, for the Bethlehem product is built to give outstanding service at very low cost. This is a fact you can prove to your own satisfaction by keeping a few simple records.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

LET YOUR RECORDS TELL YOU!

EFFICIENT JOY MACHINES

INCREASE PRODUCTION AND REDUCE COSTS

JOY CUTTERS, LOADERS and SHUTTLE CARS always mean more tonnage at less cost per ton . . .

Write for Bulletins, or

Consult a Joy Engineer

WBDCL 2409

JOY MANUFACTURING COMPANY

GENERAL OFFICES: HENRY W. OLIVER BUILDING · PITTSBURGH 22, PA.

IN CANADA: JOY MANUFACTURING COMPANY (CANADA) LIMITED, GALT, ONTARIO

The JOY *Hydraulic* ROOF BOLTING DRILL

Fastest Drilling Unit Available

for Roof Bolting

Built in 26", 30" or 36" High models

★ Performance of the JOY RBD-1 Hydraulic Roof Bolting Drill is *proved* by months of operation in the field.

★ Wherever rotary drills are applicable, it has consistently out-drilled other types—both pneumatic and electric drills—*producing as many as two-thirds more holes per shift!*

★ In practically all cases, this Drill will bottom your roof-bolting holes with only one steel change—something that *no other drill will do* except in the thickest seams.

★ The JOY Hydraulic Roof Bolting Drill is rubber-tired and self-propelled—equipped with hydraulic controls for *one-man operation.*

★ May be equipped for wet drilling—or with vacuum dust remover, as desired, *to eliminate objectionable dust.*

★ The Drill employs boom feed, and is *self-leveling* and *self-aligning* while drilling.

★ SULMET Carbide Bits and Drill Steels specially designed for the RBD-1 Drill are available.

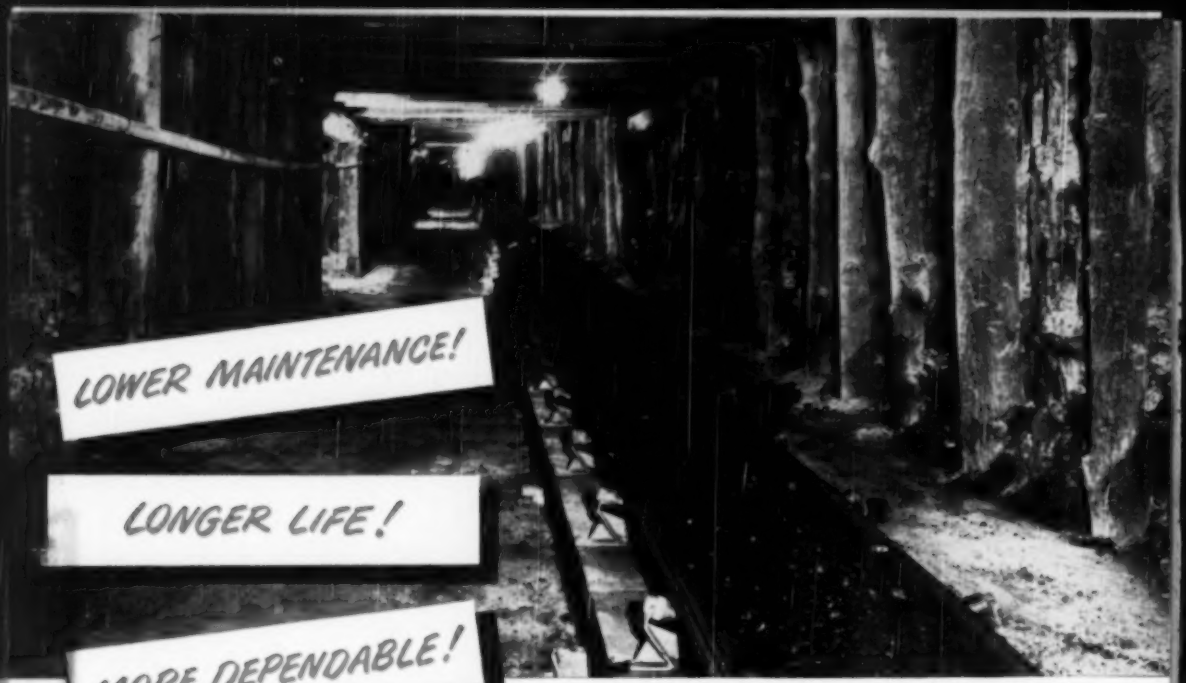
Consult a Joy Engineer

RBD CL5050

JOY MANUFACTURING COMPANY

GENERAL OFFICES: HENRY W. OLIVER BUILDING · PITTSBURGH 22, PA.

IN CANADA: JOY MANUFACTURING COMPANY (CANADA) LIMITED, GALT, ONTARIO



A JOY Belt Conveyor providing efficient, reliable main haulage.

JOY BELT CONVEYORS

FOR GATHERING OR MAIN HAULAGE

This team moves tonnage fast—a JOY Shuttle Car with elevating discharge unloading onto a JOY Belt Conveyor.

JOY Belt Conveyors do a highly capable, low cost transporting job, whether out of the entries or over the long haul. Rugged construction, sealed precision bearings which require no lubrication for life, and low power consumption are features that mean efficient, trouble-free operation . . . a smooth uninterrupted flow of coal with no waiting for empties, no matter how long the haul. ● Wherever you need a belt conveyor (or chain and shaker types) use *proved JOY* Equipment for *best* results.

Consult a Joy Engineer

W&D CL 2921

JOY MANUFACTURING COMPANY

GENERAL OFFICES: HENRY W. OLIVER BUILDING · PITTSBURGH 22, PA.

IN CANADA: JOY MANUFACTURING COMPANY (CANADA) LIMITED, GALT, ONTARIO

USERS SAY G.E.'S 9574 ALL-PURPOSE* INSULATING VARNISH "is tops!"

J. L. Hughes

How do users like General Electric's new all-purpose insulating varnish G-E 9574?

Here's a statement from J. L. Hughes, owner of the J. L. Hughes Electric Company, Columbus, Ohio.

> *"We have found from test and practical experience that General Electric general-purpose varnish 9574 is tops for our work."*

Mr. Hughes knows what he is talking about. He has been in the business of motor repair and rewinding in Columbus for thirty-three years.

YES, G-E 9574 OFFERS YOU

One varnish you can depend on for ALL* jobs.

A Combination of electrical, chemical and mechanical properties formerly found only in special-purpose varnishes.

Easier Handling: Low baking temperature; deep penetration; simple thinning with petroleum spirits.

**G-E 9574 gives excellent results on all types of coils except extra-high-speed armatures. It is one of G. E.'s complete line of electrical insulating materials, including adhesives, wedges, cements, compounds, cords and twines, sleeving, wire enamels, mica, papers and fibers, permafils, tapes, tubing, varnished cloths, and varnishes.*

SEND FOR BULLETIN! If you haven't yet tried G-E 9574, get in touch with your local G-E Distributor, or write for our new bulletin to Section K1, Chemical Department, General Electric Company, Pittsfield, Massachusetts.

You can put your confidence in

GENERAL ELECTRIC

C1560-K1

Section K1, Chemical Department
General Electric Company
Pittsfield, Mass.

Please send me your free bulletin "G-E General-Purpose Insulating Varnish 9574."

Name_____

Business_____

Address_____

City_____ Zone____ State_____

Hewitt-Robins Conveyor Belting Lasts Longer Because It's Matched to the Load

Over the years, belt conveyor operators have found it's false economy to "cut corners" on their belting. The best belting they can buy has always proved *the best buy* . . . in extra months or years of service, freedom from repairs and ease of maintenance.

And what's "best" for one materials handling job isn't always best for another. That's why we make three types of belting: Maltese Cross® for the hardest, toughest jobs; Ajax® for general service, and Conservo® for lighter applications and portable conveyors.

Each is matched to the load it will carry. Ajax Underground Belting, for example, is designed for heavy-duty, around-the-clock underground coal mine service. Because it's built to take the hardest kind of punishment, it means bigger tonnage hauls at less cost.

There's a Hewitt-Robins conveyor belt for every bulk materials handling assignment, below and above ground. For the best buys in belting, call your Hewitt Rubber distributor (listed under "Rubber Products" in the classified phone book), or write Hewitt Rubber Division, 240 Kensington Avenue, Buffalo 5, N. Y.

EVERYTHING YOU WANT IN CONVEYOR BELTING!

- **Hewitt-Robins belting is especially treated to resist the destructive action of moisture and mildew. High-grade frictions and liberal skim coat insure against ply-separation.**
- **Abrasion-resistant covers are made of extra tough rubber. Rigid-edge construction prevents curling . . . insures true troughing.**
- **Heavy textile reinforcement provides great strength with high flexibility.**
- **Dollar for dollar, you can't buy *longer belt life* anywhere!**

HEWITT-ROBINS
CONVEYOR BELTING

HEWITT-ROBINS (HR) INCORPORATED

BELT CONVEYORS (*belting and machinery*) • BELT AND BUCKET ELEVATORS • CAR SHAKEOUTS • DEWATERIZERS • FEEDERS • FOAM RUBBER PRODUCTS • FOUNDRY SHAKEOUTS • INDUSTRIAL HOSE • MINE CONVEYORS • MOLDED RUBBER GOODS • RUBBERLOKT ROTARY WIRE BRUSHES • SCREEN CLOTH • SKIP HOISTS • STACKERS • TRANSMISSION BELTING • VIBRATING CONVEYORS, FEEDERS AND SCREENS

Get these savings in your clutches

• If you're looking for increased loader efficiency, don't overlook the importance of clutches. There is much evidence to prove that better clutch operation cuts maintenance costs and boosts tonnage. The evidence is equally clear that SUPERLA Mine Lubricants contribute to efficient clutch operation in at least three important ways:

Eliminate Warm-up Time SUPERLA Mine Lubricants are fluid at low temperatures. When machines start, the lubricant readily flows over clutch plates. This eliminates drag, permits loading operations to be started immediately.

Shorten Loading Time SUPERLA Mine Lubricants keep clutch plates clean and free for action. This allows smooth operation of clutch controls. Machines can be handled more easily. Loading takes less time.

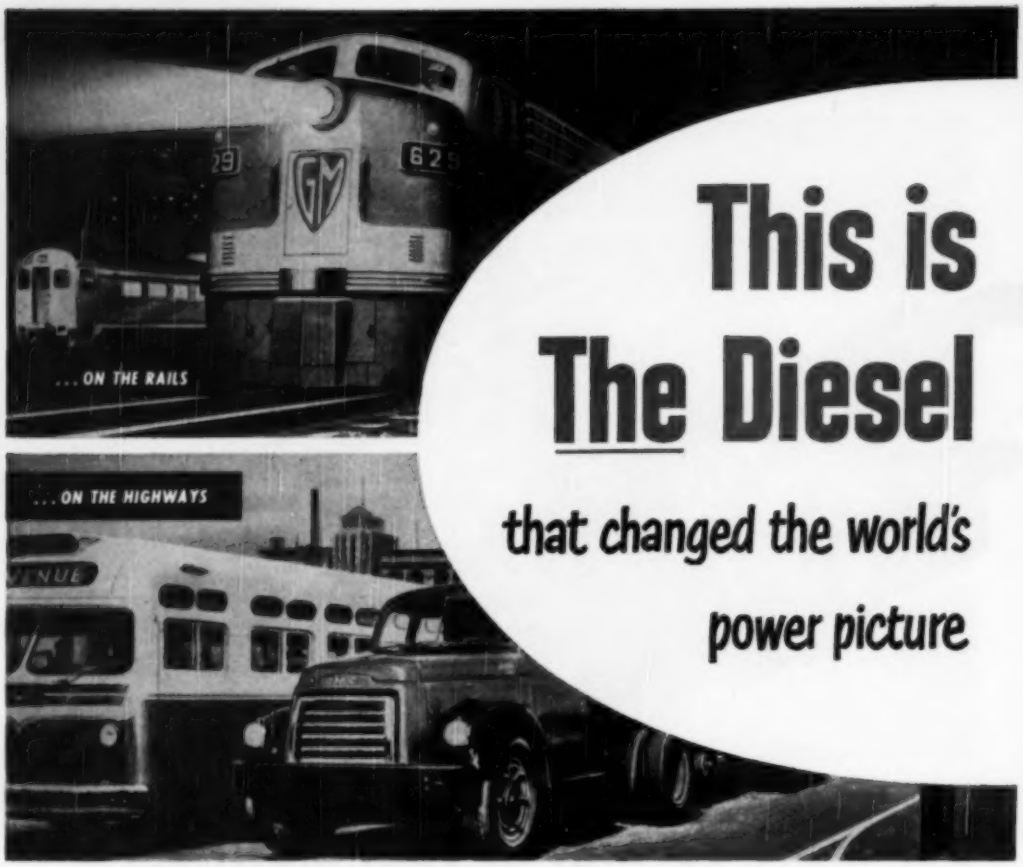
Reduce Repair Costs SUPERLA Mine Lubricants do not thin out excessively at machine-operating temperatures. This quality assures proper lubrication of clutches during long periods of continuous operation. Safer and cleaner lubrication keeps clutch maintenance at a minimum. Loaders stay on the job longer, load out more coal.

SUPERLA
REG. U. S. PAT. OFF.
Mine Lubricants

A trial of SUPERLA Mine Lubricants in your equipment will prove their ability to make savings for you. Grades are available for both oil- and grease-lubricated loaders. Ask for the services of a Standard Oil Lubrication Engineer.

Write Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.

STANDARD OIL COMPANY (INDIANA) STANDARD



This is The Diesel

that changed the world's power picture

ONE DIESEL—and one alone—blazed a trail which has won world-wide recognition for the oil-burning engine as the most economical source of smooth, dependable, agile power for locomotives, trucks, buses, marine and other mobile uses.

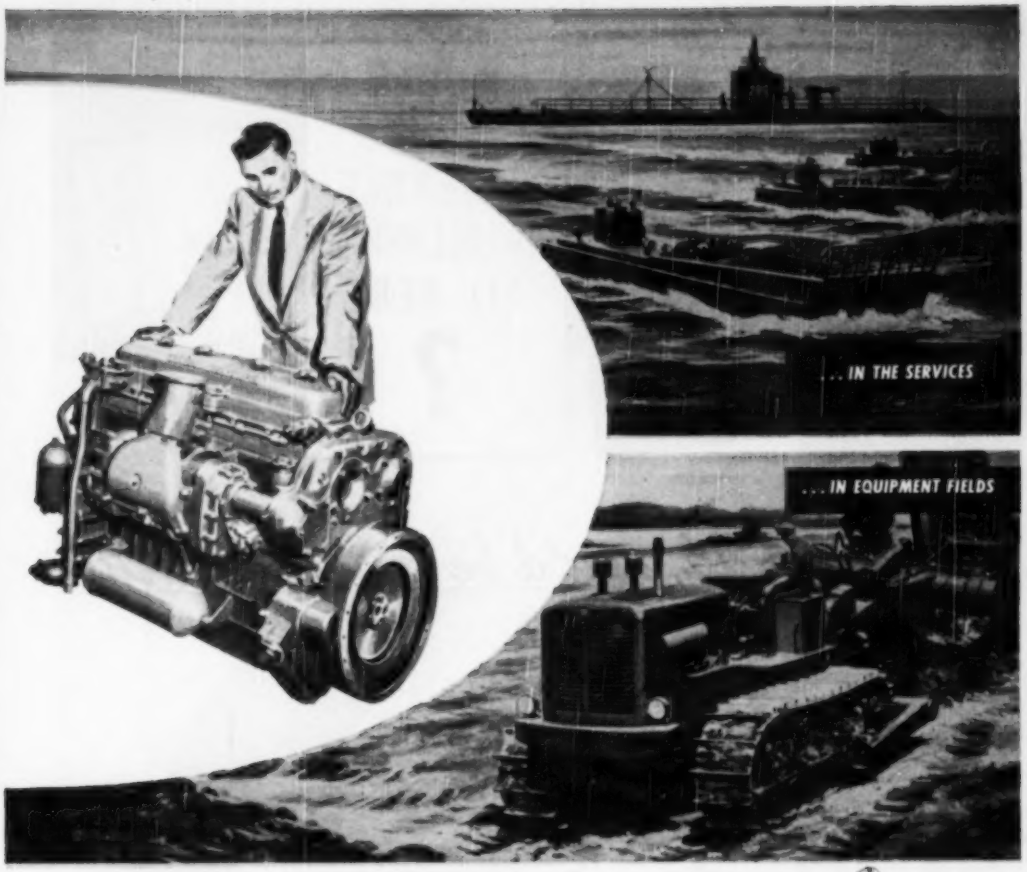
It is the General Motors Diesel engine, one size of which now drives most of America's crack passenger and freight trains. Another powers many of the Navy's submarines and other vessels.

And a third—the GM Series 71 engine—is the most widely used of all, totaling 46,000,000 horsepower. *It has surmounted the exacting conditions of War and met the economic requirements of Peace.* It has brought the same efficiency to a wide range of jobs, including many where Diesel power was never usable before.

That is because the "71," like all GM Diesels, is a two-cycle engine. Two-cycle means it produces power with every piston downstroke—in contrast to most other Diesels that generate power only on every second downstroke.

Equally important, GM Diesels have a direct jet-injection system that feeds fuel to cylinders in exactly metered charges—insuring better combustion and eliminating troublesome high-pressure fuel lines.

These basic differences make GM Diesels far more compact and much lighter than other Diesels of equal horsepower—without sacrificing ruggedness. These engines accelerate faster, are unmatched for smoothness, start quickly and are clean-burning.



"Your Key to Power Economy"

Today, GM Series 71 Diesel engines are taking the place of gasoline engines on many types of power jobs — of steam engines on land and sea — even of other Diesels because twelve years' experience has proved they are so dependable, so efficient, so economical.

General Motors 2-cycle Series 71 engines provide Diesel power at its best — *Diesel brawn without the bulk.*

Hear Henry J. Taylor on the air every MONDAY evening over the ABC Network, coast to coast.

Only GM Diesels provide all these advantages

- Smaller size, less weight per horsepower
- Two-cycle smoothness, power on every downstroke
- Quick starting, on its own fuel
- Unit injectors—no high-pressure fuel lines
- Rapid acceleration • Cleaner-burning
- Better high-altitude performance
- Easy accessibility

DETROIT DIESEL ENGINE DIVISION

SINGLE ENGINES . . . Up to 275 H.P. DETROIT 28, MICHIGAN MULTIPLE UNITS . . . Up to 800 H.P.

GENERAL MOTORS

GM GENERAL MOTORS DIESEL POWER

...If they would, you'd be saving money!!

Yes, you'd be saving, because the big feature common to all these installations is Simplex Anhydrex-Insulated Borehole Cables.

Here are Cables that cut down purchase cost for they need no costly metallic sheaths to keep out water and moisture. Where short lengths are used, and the cable is light enough to be supported by its conductors, the neoprene-jacketed type can be installed, saving the expense of steel armor wires.

Here, too, are cables that save on installation. Their lighter weight and smaller diameter make them easy to handle, easy to lower into place, and easy to pull out and relocate if desired. They require but a minimum of supporting hardware. No expensive lead-wiping jobs are required at terminations.

And last, but far from least, Anhydrex-Insulated Borehole Cables assure long, trouble-free service — the kind of service that keeps maintenance costs down low. Their Anhydrex insulation can't be beat for resistance to moisture and electrical leakage, and you can depend on the tough neoprene jacket of the unarmored type and the steel armor wires of the armored type to stand up under rough handling and to resist deterioration by both natural and operational hazards.

Simplex Anhydrex-Insulated Borehole Cables are available in single or multi-conductor types, designed for whatever voltage is required. For complete information contact the Simplex representative in your area or return the coupon below for catalog 1008, "Simplex Cables For Mining".

SIMPLEX WIRE & CABLE CO.

79 Sidney Street, Cambridge 39, Massachusetts

Paying Off at 20-to-1

OVERBURDEN ratios of 20-to-1 present no problem to this 25-cubic yard Bucyrus-Erie walking dragline. In cover averaging 50 feet and going as deep as 80 feet, this giant electric excavator has given an exceptionally good account of itself since it was put in service in 1948. Reliable performance throughout years of operation puts Bucyrus-Eries out front in stripping jobs like this one, involving a total of 250,000,000 yards. The "years ahead" design of Bucyrus-Erie stripping shovels and draglines with balanced speeds and power, sturdy construction and fast cycle pace, is assurance of continued fine performance in the years to come.

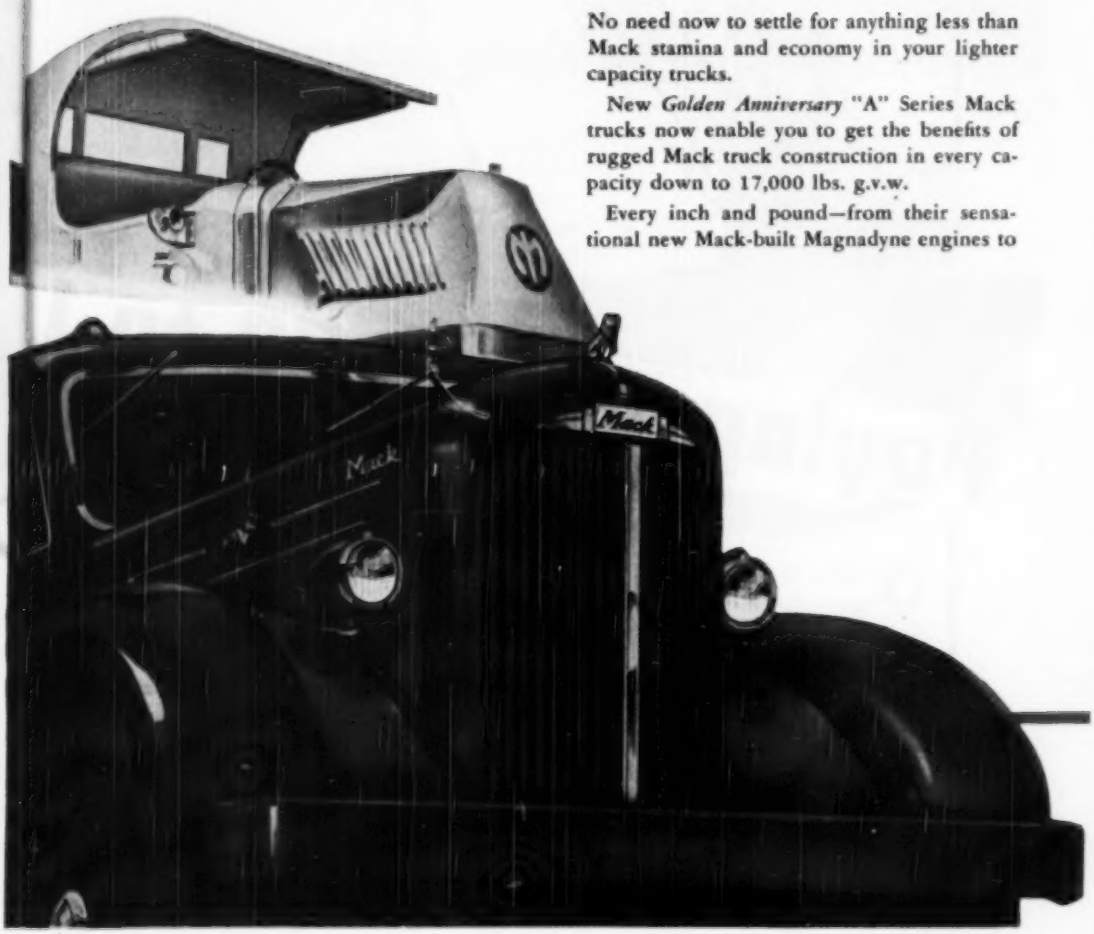
995.80

BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN

NEW *Golden Anniversary*

Now! Money-Saving Mack before available in Popular



No need now to settle for anything less than Mack stamina and economy in your lighter capacity trucks.

New *Golden Anniversary* "A" Series Mack trucks now enable you to get the benefits of rugged Mack truck construction in every capacity down to 17,000 lbs. g.v.w.

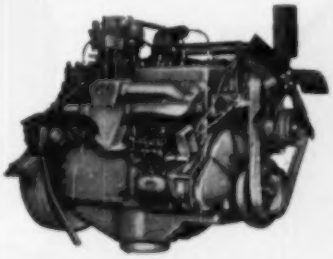
Every inch and pound—from their sensational new Mack-built Magnadyne engines to

MACK TRUCKS

advantages never -Size trucks

their exclusive rubber Shock Insulated spring suspension—these new Macks are engineered in the same high quality Mack tradition as their famous forebears . . . built to handle their hauling jobs with all the enduring reliability and longer life which has marked Mack performance for half a century.

See these great new Macks at your nearest Mack branch or distributor. You'll find that for your lighter hauling jobs, they measure up in every respect to the standards you've grown to expect from dependable, long-wearing heavy-duty Macks.



Greater fuel economy . . . longer engine life . . . lower maintenance costs . . . sustained high performance. You get them all in the great new Magnadyne engine—a powerplant designed and built by Mack especially for modern hauling.

Prolonged Clutch Life with less need for adjustment in frequent-stop operations is assured by oversized clutches—one full size larger than customary on competitive makes of trucks.

Broad adaptability to diversified operating conditions is made possible by models which offer a choice of over-geared or direct drive type transmission, as well as axle selection and a range of gear ratios.

Frame stiffness and strength are assured by full-depth side-members braced by cross-members of Mack's box-girder design. Mack rubber Shock Insulators at spring-ends eliminate twisting strain, absorb vibration, require no lubrication or adjustment, last indefinitely.

8553

BE PROFIT-WISE

modernize with

Mack TRUCKS

outlast them all

Mack Trucks, Inc., Empire State Bldg., New York 1, N.Y. Factories at Allentown, Pa.; Plainfield, N.J.; Long Island City, N.Y. Factory branches and distributors in all principal cities for service and parts. In Canada: Mack Trucks of Canada, Ltd.

Protected With Neoprene

Look for "P-105 BM" molded in the Neoprene sheath as your assurance of compliance with Federal and Pennsylvania Safety Codes.

Mine operators know from *experience* that they can depend on Rome 60 Mining Cable. They like it for its rugged Neoprene protection, inside and out . . . *their experience has been good.*

In Rome 60 Flat Twin (Parallel Duplex) Type G, for shuttle car service, power conductors and grounding conductor are separated by Neoprene which, unlike fibrous components, cannot rot, deteriorate or wick moisture. The resiliency of Neoprene, compared with fibrous materials, provides higher impact resistance . . . protection against short circuits. The absence of restraining fibrous "separators" results in maximum flexibility for fast reeling applications. Outside, the protective Neoprene sheath, molded in lead, has a tire-like toughness with high resistance to abrasion, oils, acids, and flame.

Now, more than ever, it will pay you to standardize on Rome 60 . . . the mining cable made for long, tough service.

. . . for Tough Service

Rome 60 Mining Cables

• MAXIMUM FLEXIBILITY • FLAME RESISTANCE
• SUPERIOR QUALITY • ADEQUATE GROUNDING

MODERN RESEARCH AND MANUFACTURING METHODS GIVE YOU BETTER CABLES

Rome Cable research and manufacturing experience assure you of cables *modern in design and of dependable high quality.* Such things as

- Maximum flexibility
- Overload protection with heat-resistant insulation
- Reinforcing braid for balanced adhesion
- Safe and adequate ground construction
- Flame and moisture resistant sheath are not new improvements. *They have long been standard features of Rome 60 cables.*

For lower cost production, standardize on these Rome mining wires and cables:

- Single Conductor Locomotive Cable
- Concentric Mining Machine Cables
- Portable Power Cables, Types W and G
- Remote Control and Drill Cables
- Shot Firing and Telephone Wires
- Portable Cords—Type SO

ROME 60 REMOTE CONTROL AND DRILL CABLE
NEOPRENE SHEATHED • MOLDED IN LEAD

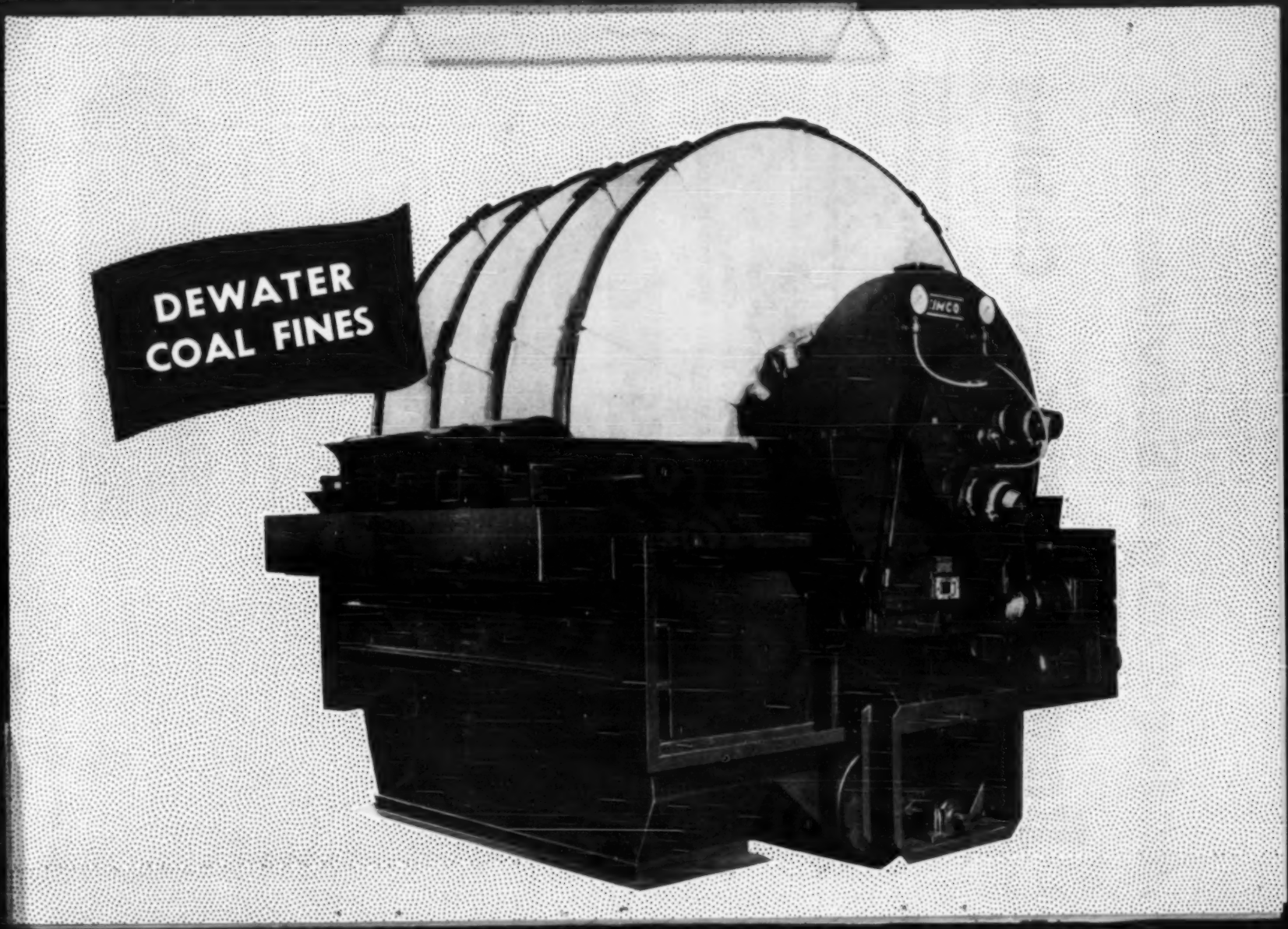
Designed for rugged service, this cable is specifically recommended for the powering of drills, as well as for portable power circuits in the remote control of other operating equipment.

While maximum flexibility is retained, the cable sheath thickness is increased to comply with Bureau of Mines standards. This heavier, two layer, glass reinforced Neoprene sheath eliminates the need for hose protection and provides high resistance to mechanical abuse.

Manufactured in full conformity to State of Pennsylvania and Bureau of Mines Safety Codes, Rome 60 Remote Control and Drill Cable is surface marked "P-105 BM."

IT COSTS LESS TO BUY THE BEST

ROME CABLE *Corporation*
ROME NEW YORK
From Bar to Finished Wire
ROME CABLE ROME, N.Y.


DEWATER
COAL FINES
TWCO

ON AN EIMCO AGIDISC

A new filter for coal dewatering

You cant beat an Eimco

Here is a new and proven way to save valuable fines in coal washeries.

The Eimco Agidisc is designed to produce a clear filtrate with maximum cake capacity per square foot of filter area per hour and at minimum cake moisture.

Agidisc Filters are heavy duty in construction and engineered especially for the plant in which they will operate. The design depends upon the size of feed and amount of slimes in the feed. Eimco Agidisc filters are "tailor-made" to fit the job.

Write for complete information.

EIMCO

THE EIMCO CORPORATION

The World's Largest Manufacturers of Underground Rock Loading Machines

EXECUTIVE OFFICES AND FACTORIES SALT LAKE CITY 8, UTAH, U. S. A.

BRANCH SALES AND SERVICE OFFICES:

NEW YORK 51-52 SOUTH STREET • CHICAGO 3319 SOUTH WALLACE STREET
BIRMINGHAM, ALA. 3140 FAYETTE AVE. • DULUTH, MINN. 216 E. SUPERIOR ST.
EL PASO, TEXAS, MILLS BUILDING • BERKELEY, CALIFORNIA, P. O. BOX 340
KELLOGG, IDAHO, 315 MAPLE STREET

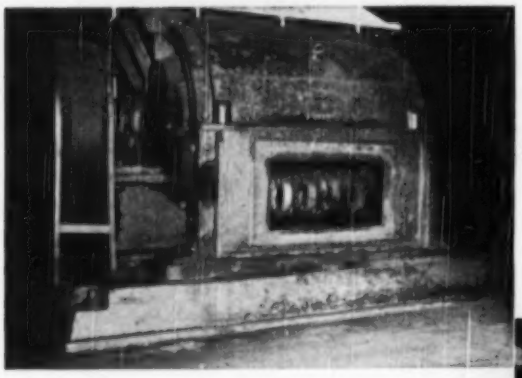
AFFILIATED COMPANIES: SOCIETE EIMCO, PARIS, FRANCE
EIMCO (GREAT BRITAIN) LTD., LEEDS 12, ENGLAND
AGENTS IN ALL PRINCIPAL CITIES THROUGHOUT THE WORLD

8359

PROVED *Champions of Quality...*

AMERICAN CRUSHERS handle high tonnage for years with amazingly LOW parts replacement costs!

THE MOST CONVINCING PROOF of American Crusher *quality* can be obtained by comparing *cost of replacement parts needed* to *tons of coal crushed* in specific operations. Taken from an extensive independent survey of users, the following case analyses are typical—

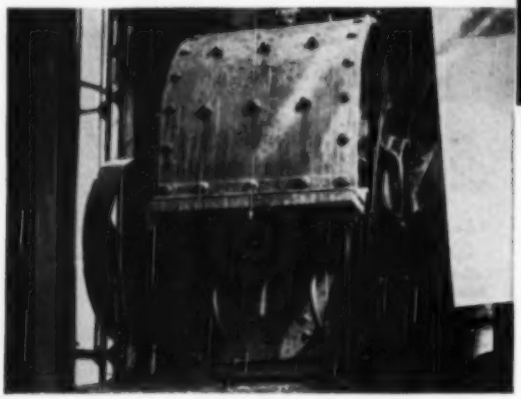


A Central Station in New Jersey

TYPE CRUSHER: AMERICAN 42S
YEARS IN SERVICE: TWENTY
TONNAGE HANDLED: 6,000,000
PARTS COST PER TON: $.00025

A Power Plant in Illinois

TYPE CRUSHER: AMERICAN 42S
YEARS IN SERVICE: SIX
TONNAGES HANDLED: 2,950,000
PARTS COST PER TON: $.0004



An Industrial Power Plant in Ohio

TYPE CRUSHER: AMERICAN 15C-1
YEARS IN SERVICE: NINETEEN
TONNAGE HANDLED: 182,000
PARTS COST PER TON: $.0000

These typically low parts cost figures are revealing—*they help to explain why American Crushers can reduce coal for less than 1 cent per ton even when all other operating costs are included!*

Write for LITERATURE ON AMERICAN CRUSHERS

American PULVERIZER COMPANY

Originators and Manufacturers of Ring Crushers and Pulverizers

1119 Macklind Ave.
St. Louis 10, Mo.

MACWHYTE WIRE ROPE AND SLINGS

engineered to save you money on the job

Ask Macwhyte to recommend the type and size of wire rope best suited for your needs. *There are a thousand and one wire ropes made by Macwhyte.*

Specifications for the correct sling for any lifting need are yours from Macwhyte for the asking.

Prevent loss!
Save time!
Be sure!

MACWHYTE WIRE ROPE:

Available in the complete Macwhyte line are Internally Lubricated *PRE*formed Wire Ropes for all equipment—plus Galvanized, Stainless Steel, and Monel Metal Wire Ropes. Also available are special assemblies of Macwhyte Wire Rope and Industrial Standards "Safe-Lock" fittings. Fittings are attached to rope by swaging—and assemblies are made to order.

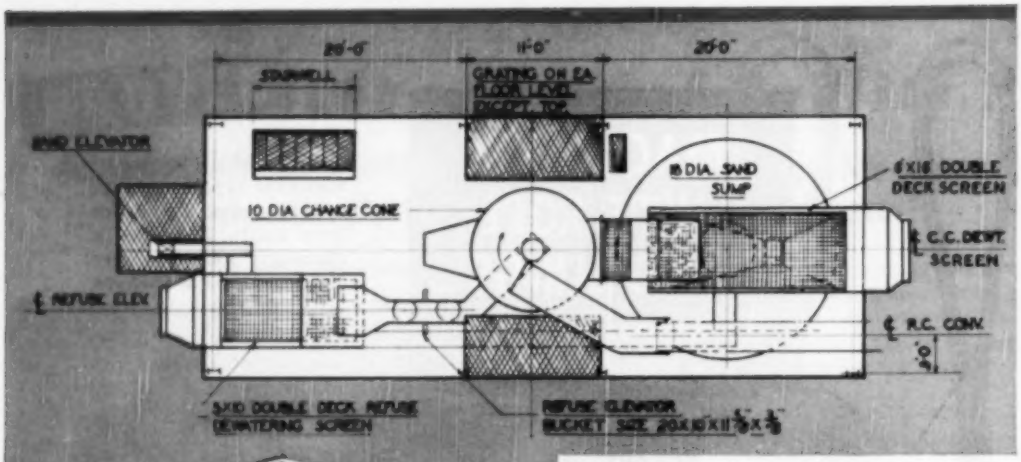
MACWHYTE SLINGS:

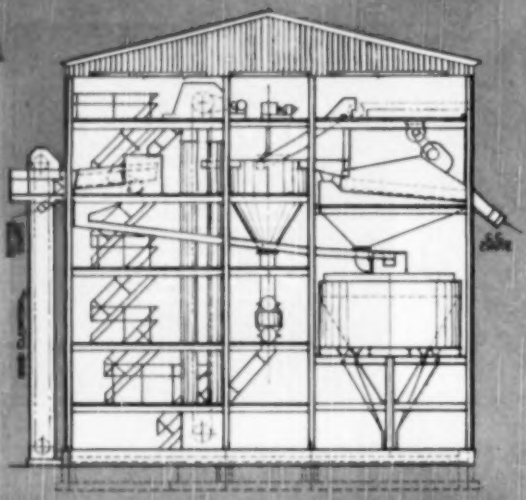
Available in all types, sizes and lengths, to meet almost any lifting requirement. Macwhyte ATLAS Round-Braided Slings, Drew Flat-Braided Slings and Monarch Single-Part Wire Rope Slings are all made to order to fit your needs. Illustrated is a special Macwhyte Drew 14-part Type 1CT Flat-Braided Sling.

WHATEVER YOUR NEEDS

for wire rope, slings, special assemblies, solutions for special problems, ask a Macwhyte distributor or write direct to Macwhyte Company for suggestions and recommendations.

MACWHYTE COMPANY, *2931 Fourteenth Avenue, Kenosha, Wisconsin. Manufacturers of Internally Lubricated Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies, Monel Metal and Stainless Steel Wire Rope. Our distributors and mill depots throughout the U.S.A. and other countries carry stocks for immediate delivery. Catalog on request. Mill Depots: New York • Pittsburgh • Chicago • Minneapolis • Fort Worth • Portland • Seattle • San Francisco • Los Angeles*





Something NEW *for the Industry*

FAIRMONT
"Packaged-Plant"
COAL CLEANER

For the first time in the coal industry there is an opportunity for the smaller operator to compete in the premium coal market.

Now, the small operator can meet a wide range of premium coal specifications with a modern Chance Original "Heavy Density" Coal Cleaner and at a cost that is in line with his production facilities.

This new Fairmont Unit offers:

1. A "packaged-plant" of cone feed up to 200 tons per hour.
2. A unit as rugged and modern as any large plant Fairmont builds.
3. A run-of-mine capacity up to 300 tons per hour.

Consult a Fairmont Engineer on the new markets this plant opens to you. Also discuss with him ways and means for this unit to fit into your present plant.

CHANCE ORIGINAL "HEAVY DENSITY" COAL CLEANER

FAIRMONT MACHINERY COMPANY
FAIRMONT, WEST VIRGINIA

DESIGNERS AND CONSTRUCTORS OF CHANCE SAND FLOTATION PROCESS FOR WET CLEANING AND AMERICAN PNEUMATIC SEPARATOR FOR DRY CLEANING

WHY MINE OPERATORS GET

J&L STEEL

30% to 60% Longer Service

FROM WIRE ROPE OF THIS DESIGN

Mine operators get 30% to 60% and even *longer* service from wire ropes of this unique design because *it has more steel and fewer voids than any conventional wire rope!* Result: Higher strength . . . Greater flexibility . . . Easier handling . . . Longer life.

Published records prove that this wire rope, when used in applications for which it was designed, reduces operating costs, diminishes downtime and increases profits.

Known as CENTERFIT, an exclusive J&L wire rope, it is laid together in *one* operation. All strands run in the *same* direction. Outside strands fit snugly into valleys between inside strands, eliminating crossing as in conventional designs. *This prevents internal nicking.*

CENTERFIT is recommended for *hoist lines, closing lines, cable controls* on earth moving equipment, and *draglines* when operating on small diameter drums and sheaves.

In addition *only* J&L wire rope is lubricated with BRONZ-LUBE — the lubricant with the high film strength that prevents squeezing out between strands. BRONZ-LUBE contains fine flakes of soft bearing metal providing a smooth wear-resistant bearing surface for every wire—forms close adherent coating that doesn't drip off unless subjected to high temperature.

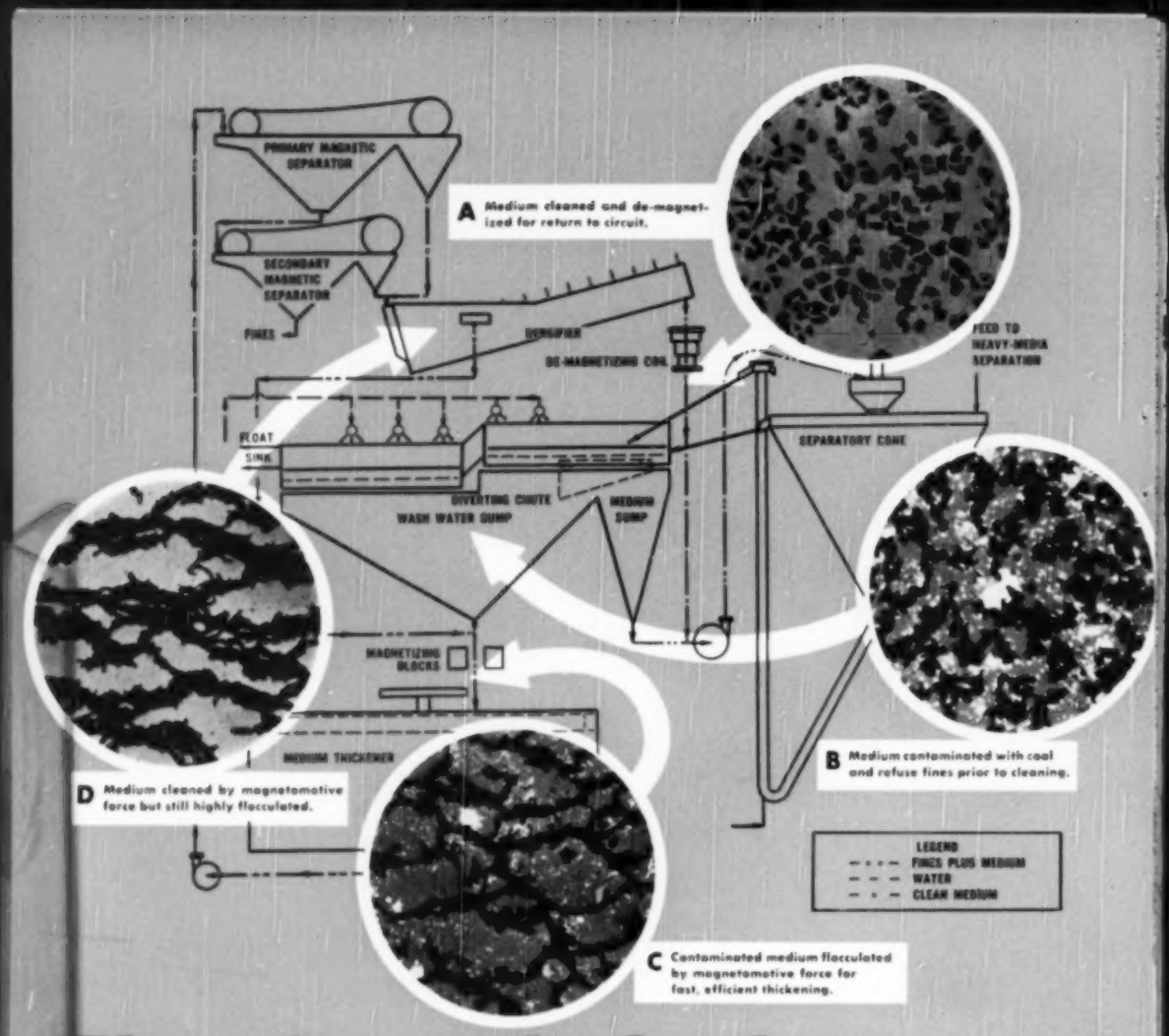
HERE'S HOW YOU CAN SAVE MONEY ON WIRE ROPE

Keep an accurate performance record on your present wire rope on applications mentioned above. When it is worn out, switch to J&L CenterFit and compare its performance with what you are now using. We'll gladly send you a wire rope service card with a plastic holder *free!* Write on your business letterhead to: Jones & Laughlin Steel Corporation, 411 Jones & Laughlin Building, Pittsburgh 30, Pennsylvania.

JONES & LAUGHLIN STEEL CORPORATION

From its own raw materials, J&L manufactures a full line of carbon steel products, as well as certain products in OTISCOLOY *and* JALLOY *(hi-tensile steels).*

PRINCIPAL PRODUCTS: HOT ROLLED AND COLD FINISHED BARS AND SHAPES • STRUCTURAL SHAPES • HOT AND COLD ROLLED STRIP AND SHEETS • TUBULAR, WIRE AND TIN MILL PRODUCTS • "PRECISIONBILT" WIRE ROPE • COAL CHEMICALS



Photomicrographs show how

Heavy-Media Separation provides the most accurate separation at any desired specific gravity between 1.25 and 2.50

For years, laboratory float-sink results have been the standard against which all coal cleaning methods are compared. For years, preparation engineers have known that a float-sink process employing a mixture of a finely ground, heavy solid and water (as a substitute for heavy liquids) offered the greatest promise to equal on a commercial scale the perfect separations obtained in the laboratory. And magnetite was known to possess the ideal characteristics for the medium solid—high specific gravity (5.0), abrasion and rust resistance, ready availability, low cost.

But despite these inherent advantages, the use of float-sink methods employing fine magnetite never achieved widespread commercial success until the development of Heavy-Media Separation Processes. The signal success of Heavy-Media Separation is based on unique and exclusive applications of magnetomotive force to provide the necessary constant control, conditioning and recovery of the magnetite medium.

Photomicrographs of medium samples taken from an operating plant at the indicated points in the flow scheme show clearly how Heavy-Media Separation provides this precise and automatic medium control.

A shows the clean, dispersed and uniform magnetite that must be continually returned to the separating pool in order to maintain the medium at the desired specific gravity and to keep the viscosity low enough so that it will not interfere with sharp separation of clean coal from refuse. By controlling the amount of medium sent through the cleaning circuit, the operator can maintain the specific gravity of the medium in the separating pool within ± 0.01 of the optimum separating gravity.

B shows dirty medium washed from the separated coal and refuse. Black areas are particles of magnetite. White and grey spots are clay, fine coal and slate, pyrite, etc. that must be quickly and constantly removed so that these contaminants will not lower the gravity or raise the viscosity of the separating medium.

C shows the dirty medium after passing through magnetizing blocks. It is now well flocculated for fast settling in the medium thickener where the magnetite quickly sinks while fines and excess water overflow. Magnetomotive flocculation permits the use of relatively small, efficient thickeners for lower plant costs.

D shows the medium after passing through the 99.9+% efficient magnetic separators. Non-magnetic foreign matter has been eliminated. The magnetite is now clean, but still in a flocculated, fibrous, magnetized state. To destroy the magnetic charge and allow the magnetite to disperse readily, it next passes through a demagnetizing coil. The magnetite is now clean, dispersed and comparable in quality to its original condition (shown in A) . . . ready to return to the separating pool.

No other float-sink method provides this exclusive 4-stage medium control with attendant low medium cost. No other method—float-sink or mechanical—provides the same uniform excellence of separating efficiency hour after hour, regardless of normal fluctuations in rate or character of feed coal.

Before you decide upon a new cleaning plant or the modernization of your present washer, it will pay to make a comparative study of the higher recovery and better grade of coal you can obtain by using Heavy-Media Separation. American Cyanamid Company, as Technical and Sales Representative for Heavy-Media Separation Processes, will work closely with you and engineers of your choice in the design and initial operation of Heavy-Media Units. We are prepared to run carload tests on your coal in the Heavy-Media Separation pilot plant of the Cyanamid Mineral Dressing Laboratory, and to give you every practical help in fitting these cleaning methods to your conditions.

AMERICAN Cyanamid COMPANY

MINERAL DRESSING DIVISION

30 ROCKEFELLER PLAZA NEW YORK 20, NEW YORK

CHEVROLET

The World's Most Popular Engine!
More truckers use Chevrolets than any other make. And one important reason is Valve-in-Head engine design. For 38 years Chevrolet has been the largest producer of valve-in-head engines — engines world famous for power, dependability and outstanding economy.

Lower Cost per Mile! Chevrolet's Valve-in-Head Loadmaster engine and Chevrolet's greater horsepower at the clutch add up to important advantages to truckers. They mean greater efficiency—they mean *bigger payloads at lower cost per mile!*

Better Buy . . . Better Resale! Low first cost coupled with dependability and economy make Chevrolet trucks *the* buy. Chevrolet trucks have led in demand and sales for the last eight consecutive truck production years . . . are far ahead this year, according to current registration figures. Here is proof of greater owner satisfaction . . . satisfaction which has made Chevrolet's higher resale value traditional across the nation.

First in demand
First in value
First in sales

Chevrolet Trucks
CUT YOUR COSTS ON EVERY HAUL!

Chevrolet heavy-duty trucks with Loadmaster engine actually deliver *more horsepower at the clutch* . . . more *net* horsepower—proved by certified ratings on engines used as standard equipment in conventional models of the five most popular makes, 13,000 to 16,000 lbs. G.V.W.* Here, then, is power to *move* big payloads . . . in a truck with strength to *carry* big payloads . . . and these add up to outstanding, all-around efficiency. You save on gas, oil and upkeep, cutting your costs on every haul! See your Chevrolet dealer—get the full story of Chevrolet leadership. *Gross Vehicle Weight

CHEVROLET MOTOR DIVISION, *General Motors Corporation*
DETROIT 2, MICHIGAN

PLUS—Chevrolet Advance-Design Truck Features!

TWO GREAT VALVE-IN-HEAD ENGINES: the new Loadmaster and the improved Thriftmaster—to give you greater power per gallon, lower cost per load • THE NEW POWER-JET CARBURETOR: smoother, quicker acceleration response • DIAPHRAGM SPRING CLUTCH for easy-action engagement • SYNCHRO-MESH TRANSMISSIONS for fast, smooth shifting • HYPOID REAR AXLES—5 times more durable than spiral bevel type • DOUBLE-ARTICULATED BRAKES—for complete driver control • WIDE-BASE WHEELS for increased tire mileage • ADVANCE-DESIGN STYLING with the "Cab that Breathes" • BALL-TYPE STEERING for easier handling • UNIT-DESIGN BODIES—precision built.

6 big reasons why

it's TIMKEN®...and TIMKEN®...and TIMKEN® again

for heavy-duty conveyors!

Timken bearing equipped troughers have given years and years of service in miles and miles of belt conveyors.

1 **PROVEN HEAVY-DUTY PERFORMANCE.** Every heavy duty conveyor installation which has 15 years or more service and uses the popular dead-shaft tapered roller bearing construction is equipped with Timken® bearings.

2 **EXTRA CAPACITY.** Due to line contact between rollers and races, Timken bearings have high load capacity. And because of Timken's tremendous industrial and automotive bearing production which results in low unit cost, it is economical to select bearings with capacity in excess of actual requirements. Result: longer bearing life.

3 **FRICTION MINIMIZED.** Timken bearings roll freely. Fresh, clean lubricant at regular intervals means no gummy, sticky, jammed bearings.

4 **LONGER ROLLER AND BELT LIFE.** The friction-free operation of Timken bearings means less sliding and scuffing between idlers and belt. Belts and idlers last longer, require fewer repairs.

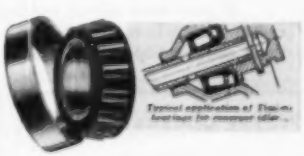
5 **LONG-LIFE LUBRICATION.** Not just lubricated for "life" (which could be very short) but lubricated periodically as conditions require to insure *long* life. The design of Timken tapered roller bearings eliminates the possibility of wear-creating abrasives being trapped within the bearing.

6 **MAINTENANCE REDUCED.** Timken bearings insure long, trouble-free service, with a minimum of maintenance for the entire conveyor installation.

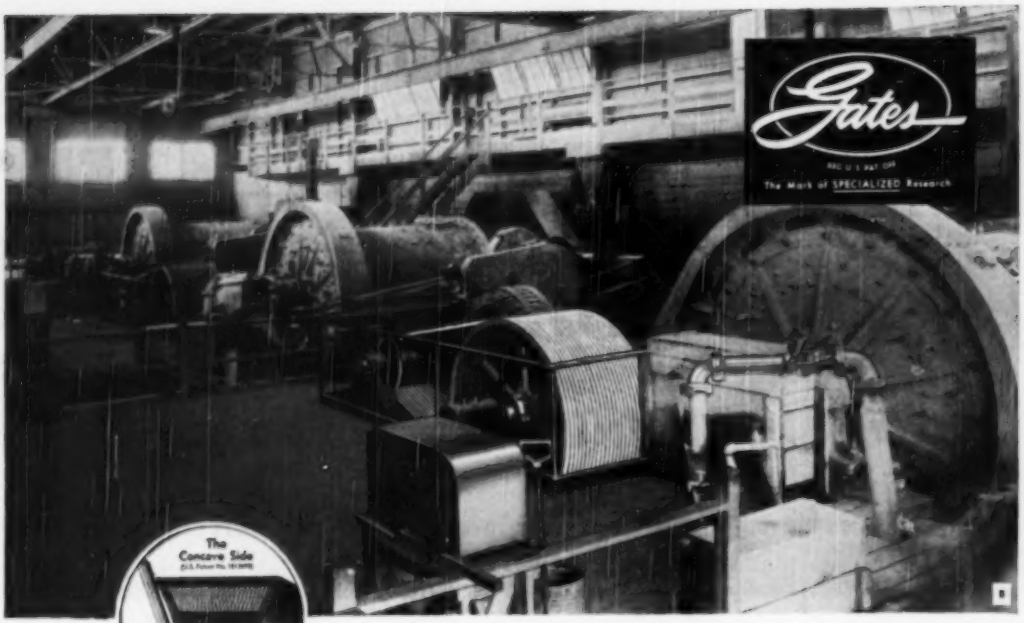
SPECIFY TIMKEN! Major manufacturers of heavy-duty conveyors are ready and willing to supply Timken bearings in their idlers at your request. Insist on Timken bearings and remember, the word "Timken" is not a bearing type but a trade-mark applying to bearings made only by The Timken Roller Bearing Company. Always look for the trade-mark "Timken" on the bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

Wherever the going's tough industry turns to **TIMKEN** TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS



NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▭ BEARING TAKES RADIAL ◐ AND THRUST ◐ LOADS OR ANY COMBINATION



Profits of Bagdad Copper Corporation's isolated Arizona plant depended on maintaining economical and trouble-free operation. They chose the Gates Vulco Rope Drives (shown) for these big ball mills because of their proven ability to handle this rugged service. Also, because the failure of one belt would not necessitate a shutdown, but would give ample notice when a replacement set of belts was needed.

Let this simple test tell you exactly WHY the Concave Side cuts your V-Belt costs

To see for yourself the belt-saving importance of the Concave Side, just pick up *any* V-belt and bend it as it bends when it goes around a pulley.

As the belt bends, grip its *sides* firmly with your fingers. You will feel the sides of the belt *change shape*. This is because the top of the belt is under tension and, hence, grows *narrower* while the body, under compression, *bulges out*. (See figure 1 and 1-A)

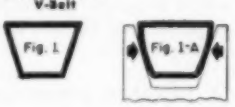
Now look at figures 2 and 2-A. There you see how the bending changes the shape of the belt that is built with the Concave Side —The Gates Vulco Rope. The concave sides of this belt merely *fill out* and become perfectly *straight*. There is no side-bulge. This belt, when bent, *precisely fits its sheave groove*.

A very distinct saving in belt wear results. No side-bulge means that the sides press *evenly* against the V pulley and therefore wear *uniformly*—resulting in longer life for the sidewall and, naturally, *longer life for the belt!*

If you care about cutting your belt costs, it will pay you to make sure, whenever you buy V-Belts, that you get the V-Belt with the Concave Sides...the Gates Vulco Rope!

What Happens When a V-Belt Bends

Straight-Sided V-Belt



How Straight-Sided V-Belt Bulges in Sheave-Groove. Sides Press Unevenly Against V-Pulley Causing Extra Wear at Point Shown by Arrows.

Gates Vulco Rope with Concave Side

The Concave Side Fills Out to a Precise Fit in the Sheave Groove. No Side Bulge! Sides Press Evenly Against the V-Pulley—Uniform Wear—Longer Life!

CS-508

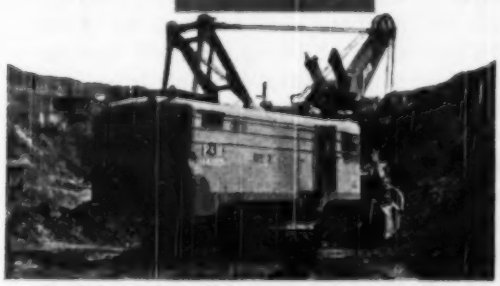
THE GATES RUBBER COMPANY
DENVER, U.S.A.
World's Largest Makers of V-Belts

GATES VULCO ROPE DRIVES
IN ALL INDUSTRIAL CENTERS
Engineering Offices and Jobber Stocks of the U.S. and 71 Foreign Countries

PRODUCTION IS UP!

COSTS ARE DOWN!

WITH P&H ELECTRIC SHOVELS . . .



. . . at the Steep Rock Iron Mines in Canada. Here, the first P&H Model 1400 (4 cu. yds.) was quickly followed by two more.

Bigger tonnage at lower cost . . . that's the real test. And there's where you'll find the P&H 1400 leads the way with such features as the Magnetorque* which electro-magnetically powers the hoisting motions . . . *smoother, faster,* and more *dependably.* Quicker move-ups by independent propel add *more* tonnage. Stepless electrical control saves time by eliminating *all* contactor troubles. These and many other P&H features combine to give you increased production. Greater production means greater profits for you. Write, today, for information.

*Trade-mark of Harnischfeger Corporation for electro-magnetic type clutch.

Every third P&H electric shovel sold is a repeat order.

P&H ELECTRIC SHOVELS
4540 West National Avenue
Milwaukee 14, Wisconsin

HARNISCHFEGER CORPORATION

Important to
Modern Mining

LINK-BELT ROLLER CHAIN
ON EQUIPMENT FOR CUTTING

It's a rough, tough life for cutting machines . . . and rough going calls for tough chains . . . chains that give dependable, long-lasting service under the most rugged conditions.

Link-Belt Precision Steel Roller Chains can be depended on to back the cutter to the limit in maintaining steady peak production.

Link-Belt roller chain is built to the highest standards of precision by the world's largest chain manufacturer . . . it's strong, positive and non-slip . . . yet shock absorbing, compact, flexible and comparatively light in weight. Link-Belt sprockets are a fitting companion to Link-Belt roller chains.

Our engineers will be glad to help you in the application of chains to your requirements . . . let a Link-Belt engineer give you the benefit of Link-Belt's long experience in the industry.

LINK-BELT COMPANY

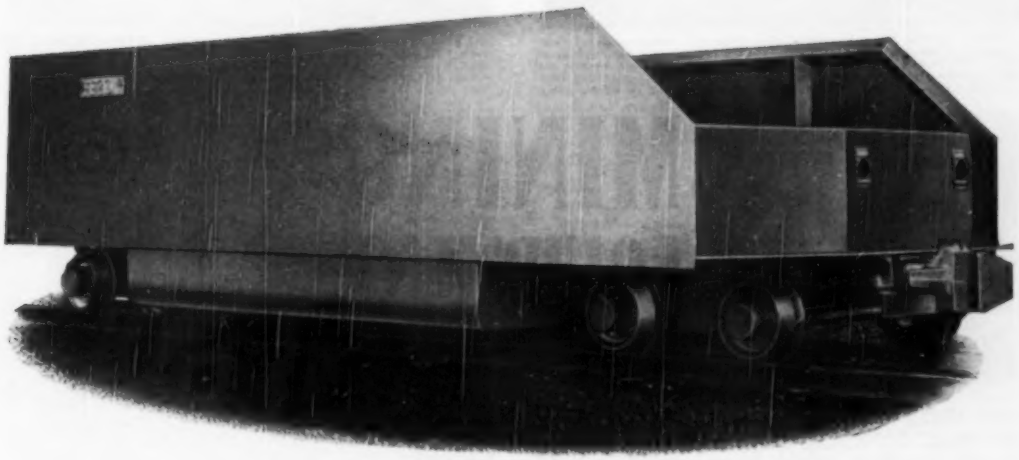
Chicago 9, Philadelphia 40, Pittsburgh 13, Wilkes-Barre, Huntington 9, W. Va., Louisville 2, Denver 2, Kansas City 8, Mo., Cleveland 15, Indianapolis 6, Detroit 4, Birmingham 3, St. Louis 1, Seattle 4, Toronto 8, Johannesburg. 10,501

LINK-BELT

Precision Steel

ROLLER CHAINS & SPROCKETS

Built for the Long Grind



Here's a Bethlehem all-steel car that's husky and tough as a rhino, and even more durable. Repair bills on this big fellow needn't enter your calculations for years. It's built to absorb hard knocks instead of sitting out expensive time in the shop.

The unit has a rugged welded body of 10-ton capacity; eight sturdy forged wheels, roller bearings designed to last for the life of the car, and automatic self-centering couplers. Strength in abundance, plus everything needed for a smooth, easy pull.

Because of its low maintenance cost and the way it tones up haulage, this car is a source of real savings. It adds an extra touch of efficiency to the mine railway system—long recognized as the best, most foolproof method of moving coal both underground and above ground.

Bethlehem builds mine cars in end- and rotary-dump, high- and low-side types. When in the market, call us. If the big car shown here doesn't meet your needs, we'll gladly build to your specifications.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM *ALL-STEEL* **MINE CARS**

BETHLEHEM STEEL

1750 hp. Electric Hoist for coal-mining company. Cylindro-conical tight-and-loose drums are each 9 to 15 ft. in diameter; grooved for 1676 ft. of active 1⅛" rope. Equipped with air-operated brake and clutch engines and modern safety devices that provide dependable protection against any damage that might be caused by current failure, overwinding or overspeeding.

600 hp. Electric Hoist for metal-mining company. Cylindrical drums are each 7 ft. in diameter; grooved for 2650 ft. of active 1⅛" rope. In addition to post-type brakes, oil-hydraulic brake and clutch engines and modern safety devices, this hoist is equipped with a system of dynamic braking that assures important savings in both operating and maintenance expense.

Vulcan "Allcasteel" Sheave on modern head-frame. Besides being light and very strong, Vulcan Allcasteel sheaves are so highly resistant to rope wear that NO LINERS ARE NEEDED. Available in a wide range of types and sizes with either plain or anti-friction bearings.

MINING EQUIPMENT

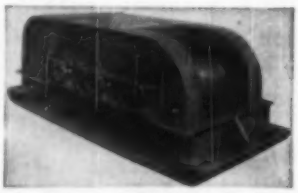
with a 101-Year Record of Satisfactory Service

Located in the heart of the anthracite field, the Vulcan Iron Works has been building dependable mining equipment since 1849, taking full advantage at all times of every approved advance in design, materials and manufacturing methods. Unsurpassed facilities and a long-established policy of sturdy construction assure prompt deliveries and satisfactory service at lowest ultimate expense.

So many problems have been solved successfully during this long period of service to mining companies throughout the United States and many other countries that most requirements can now be taken care of successfully by utilizing some well-proved design with little or no modification. Our experienced engineers are always ready, however, to cooperate with the purchaser in the development of a new design to meet his particular operating conditions.

Write us regarding any requirement within the wide range of equipment listed below. We welcome opportunities to make helpful suggestions without charge or obligation. Bulletins on request.

Self-Dumping Cage for high-speed hoisting in a coal mine. We build many other types of cages for coal and metal mines; either from our own designs or to meet purchaser's specifications.



Standard 5 hp. Car-Spotting Hoist. Triple-reduction alloy-steel gears and other superior mechanical features assure long service life and low maintenance expense. We build room hoists, scraper hoists and other self-contained electric hoists in a wide variety of types and sizes to meet any probable requirement.

6-Ton Low-Height Diesel-Mechanical Locomotive for underground operation in a foreign country. Special equipment includes back-fire arrester and wet-type exhaust muffler. We also build Electric Mine Locomotives and all types of Diesel, Steam and Fireless Locomotives.

At left: Three-Deck Man Cage for metal mine. Small wheels with pneumatic tires are used, instead of guide shoes, to reduce the vibration and shocks of high-speed hoisting.
At right: Combination Man-Cage and Bottom-Discharge Skip for metal mine. Alloy-steel linings and rubber interlinings assure high resistance to corrosion, abrasion and loading shocks.

Vulcan Iron Works, Wilkes-Barre, Pa.

Heavy-Duty Electric Hoists
Self-Contained Hoists
Scraper Hoists
Car-Spotting Hoists
Room Hoists
Shaking-Chute Conveyors
Chain Conveyors
Cast-Steel Sheaves and Gears
Cages, Skips and Gunboats
Toothed Double-Roll Crushers
Steam Locomotives
Diesel Locomotives geared and electric drive
Gasoline Locomotives geared and electric drive
Load-Carrying Larries
Rotary Kilns, Coolers and Dryers
Briquetting Machines
Heavy Special Machinery
Open-Hearth Steel Castings

LONGER LIFTS. The high tensile strength of "Cordura" Rayon eliminates costly transfer points. For example, a belt reinforced with seven plies of "Cordura" can lift 1000 tons of overburden per hour up a 15° slope over 1000-foot centers. It has design tension of 900 pounds per inch of width.

POINTS TO CONSIDER BEFORE YOU BUY YOUR NEXT CONVEYOR BELT

Shown on this page are some of the reasons why more and more economy-minded operators are planning to have their next conveyor belt built on Du Pont Cordura® High Tenacity Rayon.

"Cordura" has so much extra strength over natural fibers previously used that it provides a thinner yet stronger belt . . . at no extra cost.

You may already know "Cordura" Rayon as the yarn that makes tougher truck tires, stronger high-pressure hose and longer-lasting V-belts. We'll be glad to send you the names of suppliers of conveyor belts improved with this industrial rayon.

You can also get full information about "Cordura" in the new manual, "Sinews for Industry." It gives physical properties of "Cordura" rayon, describes many successful applications and tells how "Cordura" improves the efficiency of conveyor systems. For your free copy, address Room 4527, Rayon Division, E. I. du Pont de Nemours & Co. (Inc.), Wilmington 98, Del.

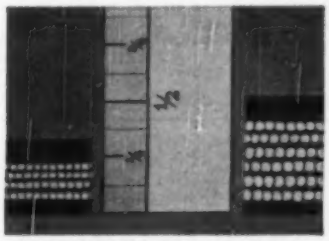
Reg. U. S. Pat. Off.

DU PONT "CORDURA" HIGH TENACITY RAYON

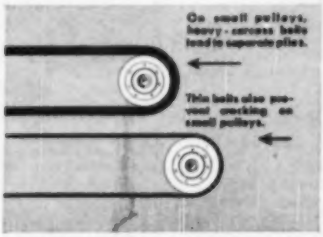
DU PONT

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

for RAYON . . . for NYLON . . . for fibers to come look to DU PONT



GREATER STRENGTH of belts built with "Cordura" is illustrated above. At left is cross-section of four-ply belt sinewed with "Cordura." It's stronger than conventional 6-ply belt at right, yet only half as thick. This thin, light belt is particularly desirable where panel equipment is moved frequently.



MORE FLEXIBLE. Belts built with "Cordura" have less tendency to crack and separate plies when run over small pulleys required in confined working space. And belts built with "Cordura" have less stretch, so less take-up room is needed. And they trough well under any loading conditions.

HEAVIER LOADING is possible on conveyor belts built with Du Pont "Cordura" High Tenacity Rayon. This yarn is inherently stronger than the natural fibers commonly used. It packs extra strength into conveyor belts and enables them to carry loads to the capacity of power equipment.

BOWDIL PRODUCTS

HELP YOU GET MORE $$$ FROM THAT MINE OF YOURS

NEW TELESCOPING TRANSIT SUPPORT

For use in all types deep mining, especially efficient for conveyor mining. As rigid as a prop, sturdily constructed of aluminum and stainless steel. Lightweight, easily, quickly sets up correct height for transit. Main column graduated on 2 sides in 1/100 foot.
Three standard lengths telescoping from 3 to 5 ft., 5 to 8 ft., and 8 to 12 ft. in height. Special lengths furnished on request.

BOWDIL BITS

Patented concave design increases bit clearance, assures longer wear without increased power consumption. Made from special steel, rolled, with concave faces. Tests in hundreds of mines have proven these Bits last 15% to 20% longer. Bowdil makes the right size and shape bit for every mining condition, to fit all types of chain.

BOWDIL CUTTER BAR

Bowdil Cutter Bars are designed for extra strength and power saving. Rivet-free body, Z bar construction, wide wearing strips make it the sturdiest bar in mining. Bowdil Bars are standardized to fit all coal mining machines.

FABRI-FORGE CHAIN

Lower your operating costs with Bowdil Fabri-Forged Chain. Rugged, easy to maintain, the drop-forged lug body stands up under heavy wear with breakage practically eliminated. A major improvement is the true-running radial track guide.

BOWDIL FAST ROPE SOCKET

You can save time with the Bowdil Rope Socket . . . takes just two minutes to install. No tools necessary. High tensile-strength steel and patented design give maximum strength.

REPLACEABLE POINT MINER'S PICK

With a Bowdil Miner's pick, it only takes a few seconds to replace a dull, blunted point with a sharp one. Light or heavy, Bowdil pick heads are perfectly designed for weight and balance, come with or without wood handle.

ALLOY STEEL AUGERS AND DRILL BITS

Uniform temper and shape eliminate almost all possibility of "grabbing." The use of special heat-treated alloy steels not only makes them last longer, but adds an important safety factor.

BOWDIL DRILL BITS

Any bit requirements can be met from Bowdil's complete line. Fish-tail auger bits, four-point auger bits and two-point clay bits are available in a number of different sizes . . . all made from Bowdil's specially treated steel for long and efficient service.

DETACHABLE JAW SPIKE PULLER

Small, easy to handle . . . pays for itself many times over. Detachable jaws make it possible to replace claws without delay. The special construction pulls spikes without bending them.

SPROCKETS FOR ALL MINING MACHINES

Bowdil Sprockets are made from special heat-treated alloy steel and designed for hard wear. Our stock of over 100 different styles includes clutch, spline and keyed types—various tooth designs of 4 to 13 teeth.

WANT SOMETHING SPECIAL? BOWDIL CAN BUILD IT

Bowdil has the staff and facilities to work with you on any custom building or rebuilding, engineering, machining, fabricating. Excellent heat-treat equipment. If you have a problem, bring it to Bowdil.

BATTERY OPERATED MINE LOCOMOTIVE DESIGNED AND BUILT BY BOWDIL

SALES ENGINEERS IN—Whitesburg, Kentucky—West Frankfort, Illinois Charleroi, Pennsylvania — Denver, Colorado — Big Stone Gap, Virginia Danville, West Virginia — Canton, Ohio — Birmingham, Alabama Helper, Utah—Kansas City, Missouri—Centerville, Iowa—Topeka, Kansas New Castle, England — Alberta, Canada

SALES AGENTS FOR *The Cincinnati* ELECTRIC DRILL

BOWDIL
COAL CUTTING EQUIPMENT
CANTON OHIO

EATON
2-Speed Truck
AXLES pay for themselves seven different ways

Faster Trips • More Pay-Load Miles
Longer Truck Life • Lower Operating Costs
Lower Maintenance Costs
Less Shop-time • Higher Trade-in Value

The advantages which Eaton 2-Speed Axles contribute to truck operation are made possible because they double the available number of gear ratios. With a flick of his finger, the driver can select a ratio best suited for pulling power or speed. This reduces strain and wear on engine and truck, cuts gas and oil consumption, saves running time. Ask your truck dealer to prove that Eaton Axles more than pay for themselves. Available for most trucks of the 1½-ton class and larger.

Axle Division
EATON MANUFACTURING COMPANY
CLEVELAND, OHIO

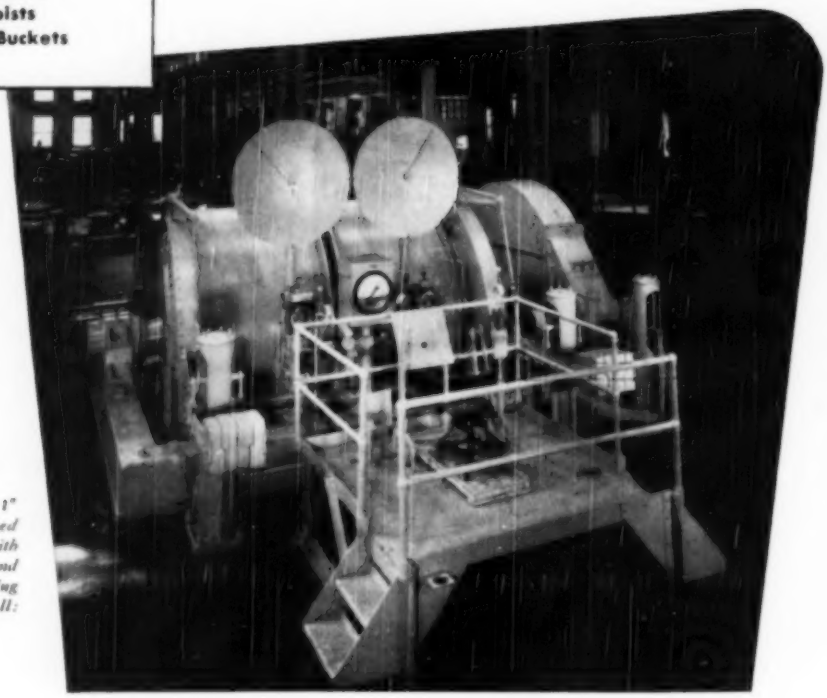
EATON **PRODUCTS:** SODIUM COOLED, POPPET, AND FREE VALVES • TAPPETS • HYDRAULIC VALVE LIFTERS • VALVE SEAT INSERTS • JET ENGINE PARTS • ROTOR PUMPS • MOTOR TRUCK AXLES • PERMANENT MOLD GRAY IRON CASTINGS • HEATER-DEFROSTER UNITS • SNAP RINGS SPRINGTITES • SPRING WASHERS • COLD DRAWN STEEL • STAMPINGS • LEAF AND COIL SPRINGS • DYNAMATIC DRIVES, BRAKES, DYNAMOMETERS

Wellman will build it

- Special Cranes
- Mine Hoists
- Car Dumpers
- Gas Producer Plants
- Ore Bridges
- Charging Machines
- Industrial Furnaces
- Gas Flue Systems
- Gas Reversing Valves
- Coke Pushers
- Skip Hoists
- Clamshell Buckets

Wellman Electric Mine Hoists

Proved by performance



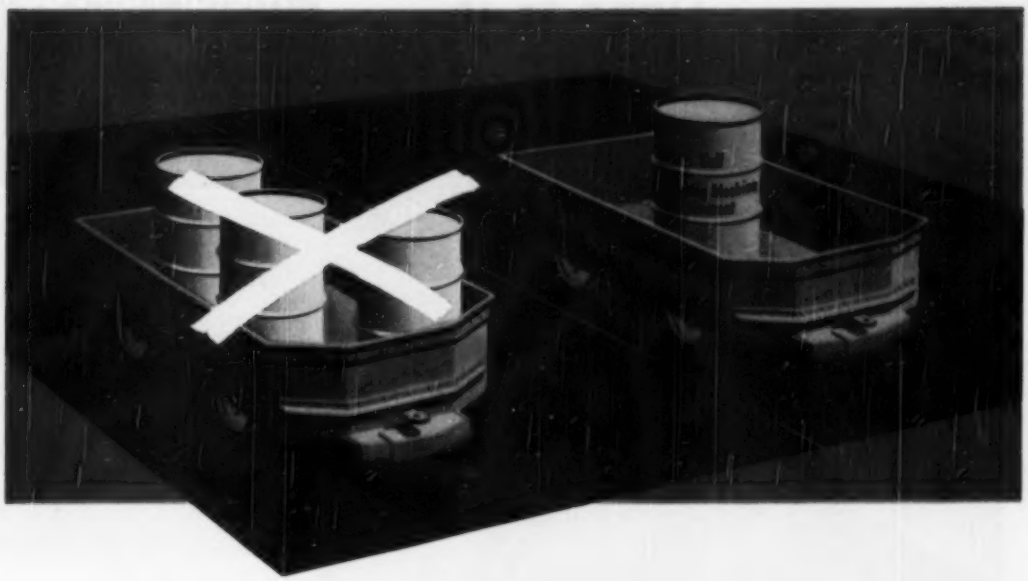
Wellman 10' x 4' 11" Double Drum Geared Electric Mine Hoist with 7' axial plate clutch and 10' x 13' Parallel Acting Brakes. Rated rope pull: 22,000 lbs.

● For more than half a century, in mines all over the world, Wellman Electric Mine Hoists have been used because they combine expert design with expert construction . . . featuring all the "modern improvements" developed in our 50 years' experience. Wellman Mine Hoists provide maximum safety, peak economy, and trouble-free operation under a wide variety of conditions. Let us give you recommendations for hoists that will do your job most satisfactorily.

THE WELLMAN ENGINEERING COMPANY

7007 CENTRAL AVENUE • CLEVELAND 4, OHIO

Why handle more?



Gulf Mining Machine Lubricant

does the job of 2 or 3 other lubricants

—and does it better!

Here's effective help in your efforts to reduce maintenance costs and simplify lubricant storage and handling—from oil house to face! When you use Gulf Mining Lubricant you can eliminate from 2 to 3 other lubricants depending on the type of equipment you operate. This means less confusion at the face, elimination of application mistakes, better lubrication.

At the same time Gulf Mining Machine Lubricant provides better protection for underground cutting and loading equipment: it resists leakage from gear cases; its superior lubricating value insures less wear; its exceptional adhesiveness prevents throwoff or channeling; and it resists the washing action of water.

Gulf Mining Machine Lubricant is equally effective for plain and antifriction bearings and for gears in drives and transmission.

To get the many benefits possible with this quality product, and for expert help in other phases of improved lubrication, call in a Gulf Lubrication Engineer. Write, wire, or phone your nearest Gulf office today.

Gulf Oil Corporation · Gulf Refining Company

GULF BUILDING, PITTSBURGH, PA.

Sales Offices - Warehouses

Located in principal cities and towns throughout Gulf's marketing territory

GULF INDUSTRIAL LUBRICATION

You asked for it... HERE IT IS—

AO's New Metal Ful-Vue Safety GOGGLE!

HANDSOMER IN APPEARANCE • STRONGER IN STRUCTURE

With the introduction of the F4100 Metal Ful-Vue, AO's protection against the impact of flying particles reaches its highest development. Here in one goggle, with or without side shields, workers can obtain the peace of mind which comes from assured safety . . . the utmost in comfort over nose and temples . . . the very finest in EYE APPEAL PLUS EYE PROTECTION!

QUICK FACTS

NEW EYEWIRE — A major contribution to *looks with strength.* Outer edges are square instead of round with a deep groove to hold lenses securely in place. Beaded engraving adds a distinctive touch. The lightweight eyewire is strong and durable.

NEW RUGGED ENDPIECE—Streamlined . . . with a wide bearing surface at hinge which minimizes temple drop. Screw heads are countersunk and flush with endpieces for added good looks, non-sagging security.

NEW LIGHTWEIGHT TEMPLE—Oval temples instead of round for greater comfort and attractiveness. Easily adjusted, perspiration proof. Insulated semi or half tubing is another appearance improver and will outlast life of the temple. Tubing will not come off and it can't be discolored by dirt or grease. Both the temple and endpiece screws are AO patented "Ever-tite" construction . . . they keep tight in service yet remove quickly when replacing lenses.

IMPROVED GUARD ARMS AND BRIDGE — Guard Arms are newly shaped — longer with more opening for added ease of adjustment. The bridge is double braced with four contact joints — a feature found only in AO Ful-Vue spectacle goggles.

NEW SIDE SHIELD CONSTRUCTION — A real time saver . . . new one-piece binder and eyewire construction *eliminates necessity of inserting the screen before inserting lenses!* Replacement of lenses can now be made without any interference with or from the side shield.

For these and many other reasons, be sure to see the new F4100. YOUR NEAREST AO SAFETY REPRESENTATIVE CAN SUPPLY YOU.

American Optical
SAFETY PRODUCTS DIVISION

SOUTHBRIDGE, MASSACHUSETTS • BRANCHES IN PRINCIPAL CITIES

For shovel hoist and dragline in strip mining, Roebling Preformed "Blue Center" Wire Rope, Long Lay, with an Independent Wire Rope Core is a must. . . . For mining machines, the same rope in Regular Lay is your one best choice.
Preformed that lasts longer and saves money!... that's why

Today it's Roebling!

YOU WANT ROPE that's *extra* tough, *extra* strong, *extra* long-lived! And you *get* these extras in Roebling Preformed "Blue Center" Wire Rope, for "Blue Center" steel has completely superior resistance to abrasion, shock and fatigue. Roebling developed and is the only maker of "Blue Center" steel . . . and Roebling research, workmanship and modern, precision machines are your added assurance of rope quality that pays off.

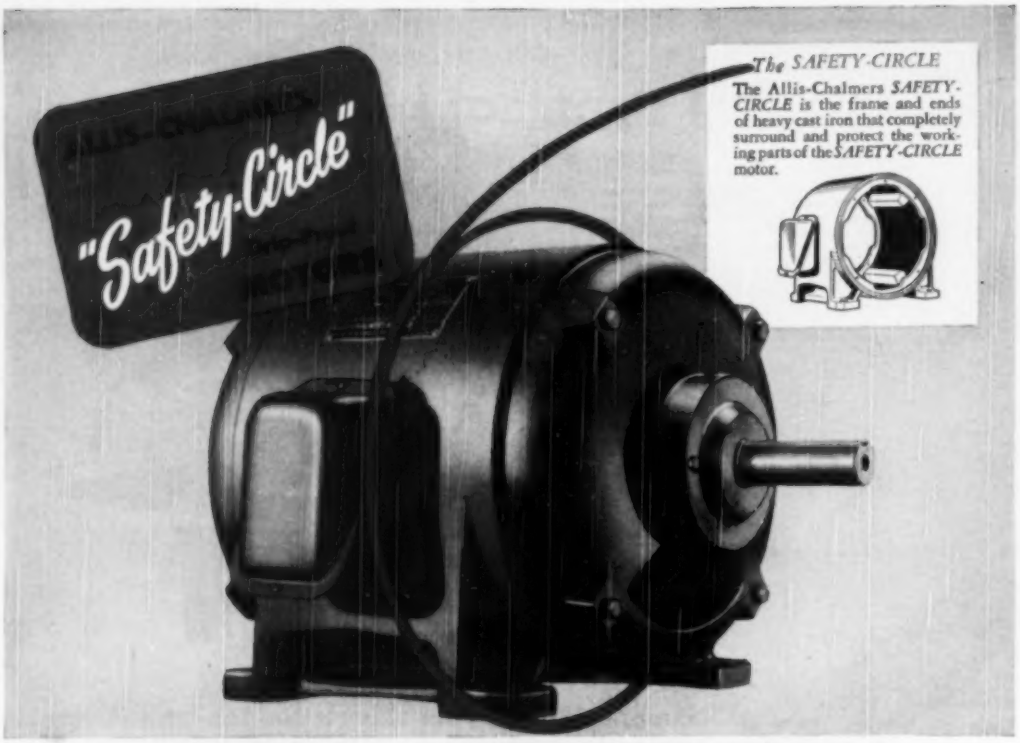
But for everything wire rope can give, be sure to get Preformed. Roebling Preforming makes rope easier to handle and install. It can be cut without seizing. It spools better . . . is not inclined to set or kink . . . minimizes vibration and whipping.

There's a Roebling wire rope of the right construction, grade and size for every type and make of rope-rigged equipment. Have your Roebling Field Man tell you which rope will give the best and the lowest-cost performance for every installation. John A. Roebling's Sons Company, Trenton 2, New Jersey.

ROEBLING

A CENTURY OF CONFIDENCE

Atlanta, 934 Avon Ave. • *Boston*, 51 Sleeper St. • *Chicago*, 5525 W. Roosevelt Road • *Cincinnati*, 3253 Fredonia Ave. • *Cleveland*, 701 St. Clair Ave., N. E. • *Denver*, 4601 Jackson St. • *Houston*, 6216 Navigation Blvd. • *Los Angeles*, 216 S. Alameda St. • *New York*, 19 Rector St. • *Philadelphia*, 12 S. Twelfth St. • *Portland*, 1032 N. W. 14th Ave. • *San Francisco*, 1740 Seventeenth St. • *Seattle*, 900 First Ave. S.


"Safety-Circle"
The SAFETY-CIRCLE
The Allis-Chalmers SAFETY-CIRCLE is the frame and ends of heavy cast iron that completely surround and protect the working parts of the SAFETY-CIRCLE motor.

SAFETY-CIRCLE means

★ All-Around Protection ★ Low Maintenance ★ Dependable Performance

A-3144

THE *SAFETY-CIRCLE* MOTOR is protected all around against those four great motor killers — corrosion . . . distortion . . . friction . . . foreign matter. The frame is of cast iron, the most corrosion-resistant material for this purpose.

The strength and stiffness of the cast iron is supplemented by ribbing and bracing to maintain alignment and prevent distortion. Ball bearings are lubricated and sealed at the factory. They require no attention for years. End brackets are drip-proof at no premium.

SAFETY-CIRCLE motors are fully protected inside, too. Multiple-dipped and multiple-baked stator plus extra inter-phase insulation provide extra protection against electrical breakdown.

With *SAFETY-CIRCLE* protection outside and protected working parts inside, you can count on years of trouble-free, low cost power.

For complete details on *SAFETY-CIRCLE* advantages, see your A-C Authorized Dealer or Sales Office or write for Bulletin 51B6210B. Stocked in sizes 1 to 20 hp. *SAFETY-CIRCLE*, *Texrope* and *Vari-Pitch* are Allis-Chalmers trademarks.

ALLIS-CHALMERS, 968A SO. 70 ST.
MILWAUKEE, WIS.

ALLIS-CHALMERS

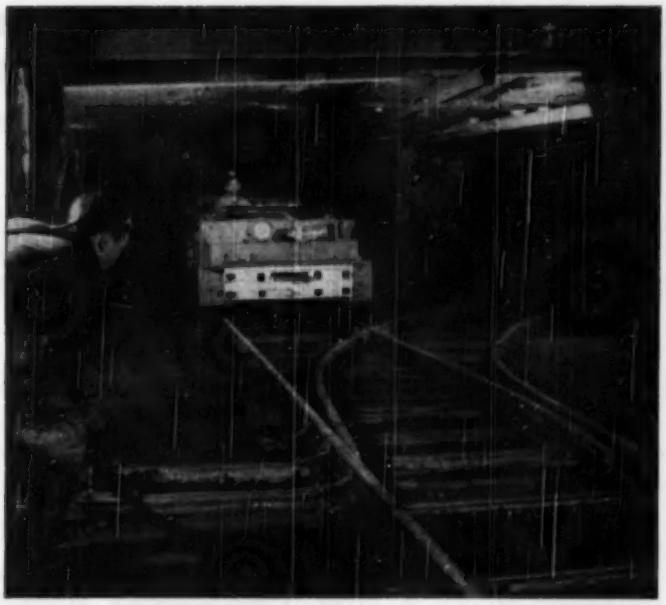
Sold . . .
Applied . . .
Serviced . . .

by Allis-Chalmers Authorized Dealers, Certified Service Shops and Sales Offices throughout the country.

CONTROL — Manual, magnetic and combination starters; push button stations and components for complete control systems.

TEXROPE — Belts in all sizes and sections, standard and Vari-Pitch sheaves, speed changers.

PUMPS — Integral motor and coupled types. Sizes and ratings to 2500 GPM.



HOW TO PUT NEW BLOOD IN SLUGGISH HAULAGE SYSTEMS

In this day of mechanization, good track is the first ingredient of low-cost haulage, and a Bethlehem prefabricated layout means good track right up to the working face.

It means a system that gets the loads out faster . . . with much less danger of derailment and with much less maintenance expense. It means a system that will easily carry the great weights of today's cutters, loaders, and motors.

Each Bethlehem prefabricated track job is planned individually. Rails are precut and precurved to the exact measurements and radii needed in any given mine, and are marked with a welded bead number. Every part of the system is designed to work in harmony with every other part—a factor vital to safe haulage and speed.

Assembly? Nothing at all complicated about it, even for crews unskilled in track work. A Bethlehem prefabricated layout can be installed by unskilled men in one-third the time required by trained track men who cut and bend rail in the field.

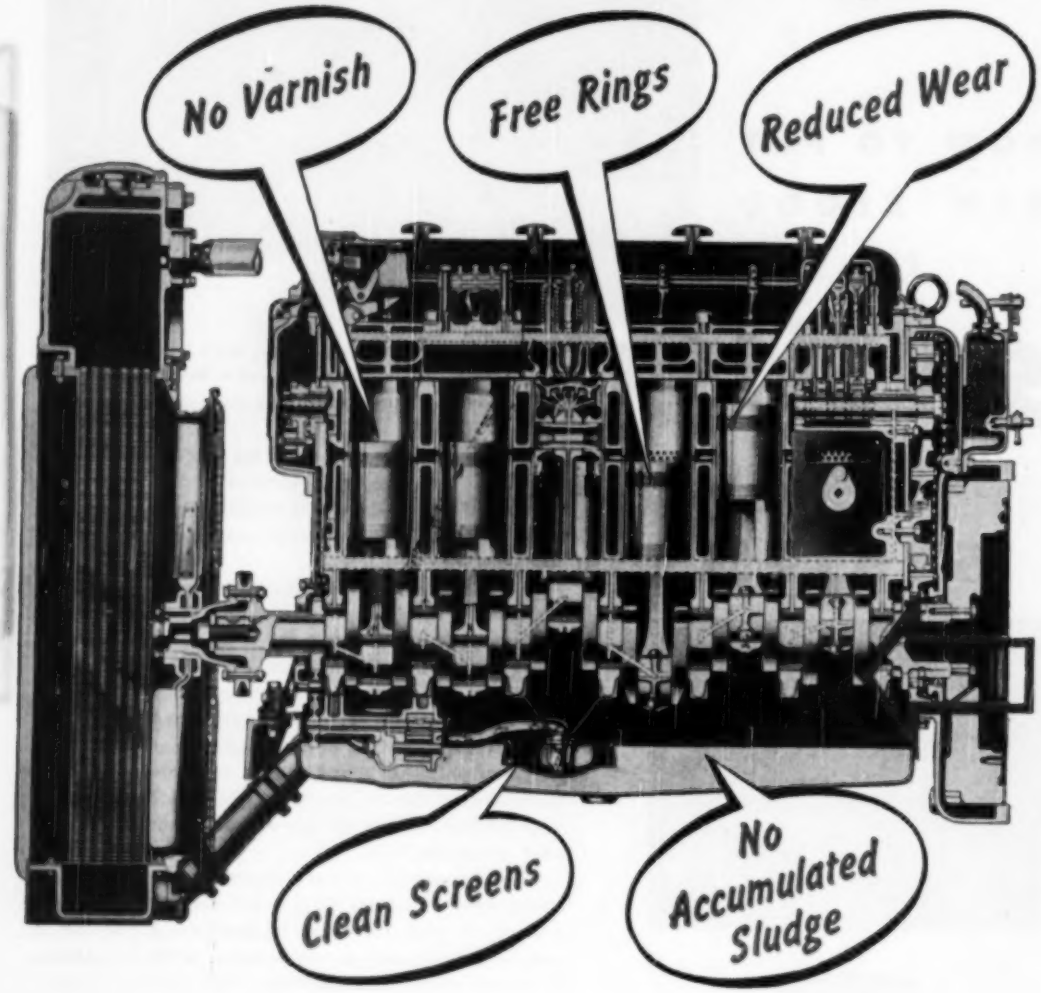
The layout comes to you complete, with rails, switches, switch stands, turnouts, frogs, steel ties, and other components all included. Once installed, you'll find that it wakes up lazy haulage, and quickly. Write the nearest Bethlehem office for full details.

BETHLEHEM STEEL

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

In SEVERE DUTY.. Can Double Engine



SINCLAIR HEAVY

Your Nearest Supplier of Sinclair Products Will Gladly Arrange for Lubrication

. New *SUPER TENOL* Life Between Overhauls

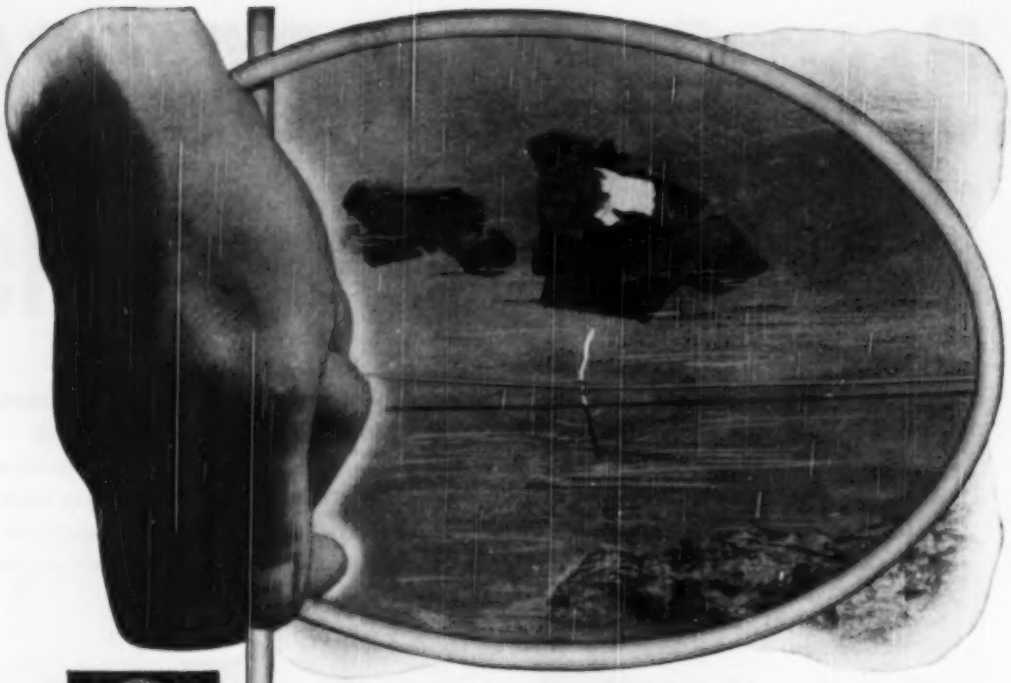
New Sinclair SUPER TENOL is an oil specially developed to eliminate the high maintenance costs so frequently encountered in both types of "severe duty" service: — 1. High temperature, high speed, over-load; and 2. Low temperature, light load, long idle, stop-and-go.

Under these abnormal conditions, operators report new SUPER TENOL has more than DOUBLED the life of their equipment between overhauls.

If you operate diesel-powered or gasoline equipment in severe duty service it will pay you to change to new SUPER TENOL now—to keep equipment in operation many more days each year, to save time, labor and money.

DUTY LUBRICANTS

Counsel or Write to Sinclair Refining Company, 630 Fifth Avenue, New York 20, N. Y.



Plastic Reinforced Primacord is recommended for all "down" lines. Use Plain Primacord for surface or "ground" lines. To make the most effective hook-up, use a simple clove hitch in the *ground* line, as shown in these three photographs.

The twin loops have been folded over to form a hole.

Pass the Plastic Reinforced Primacord through this hole and draw the two ends up *tight*.

Tough going calls for

PLASTIC REINFORCED PRIMACORD®

Surface water, sludge and mud need not delay your loading operations if you use the new Plastic Reinforced Primacord for the "down" lines. The seamless plastic cover is *waterproof* and resists penetration even at high pressures. It is also smooth, tough and resistant to the action of the acids commonly encountered. Sub-zero cold and high summer heat do not affect Plastic Reinforced Primacord. Its weight is about the same as Plain Primacord and its tensile strength is greater than that of Wire Countered Primacord.

Use Plastic Reinforced Primacord in deep, wet holes, in preloading, pipe line river crossing, horizontal holes, marine work, coyote tunnels and sleeper shots for seismograph work.

P-2

THE ENSIGN-BICKFORD COMPANY • SIMSBURY, CONN.

PRIMACORD-BICKFORD DETONATING FUSE • SAFETY FUSE SINCE 1836

Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

Coal Age

SEPTEMBER, 1950

IVAN A. GIVEN, EDITOR

Ready to Serve

IN THREE WORDS, the coal industry's position in the new scheme of things made necessary by Communist aggression in Korea is, "Ready to serve." Coal already has the capacity to support any war effort possible in the immediate future —and, in the event an added effort is required, coal has proved, by its record in World War II, that it can increase capacity still more without excessive drain on scarce or critical materials. In short, with only reasonable assistance in preserving mining and management manpower, and in assuring the necessary flow of operating equipment and materials, the industry once again is prepared to meet all the fuel needs that the future may generate.

Whether the upshot of the Korean struggle will be an honest peace, a truce, a series of 10-per cent wars or a real trial of strength, only the Kremlin really knows. But whatever the mistakes of the past—and they have been many and major in character—the United States cannot afford to make the ultimate mistakes of all: failing to prepare for winning any and all tests at arms, and letting the threat from abroad stampede us into accepting a new principle of government that might mean an end to the system on which America has been built even without a defeat in battle.

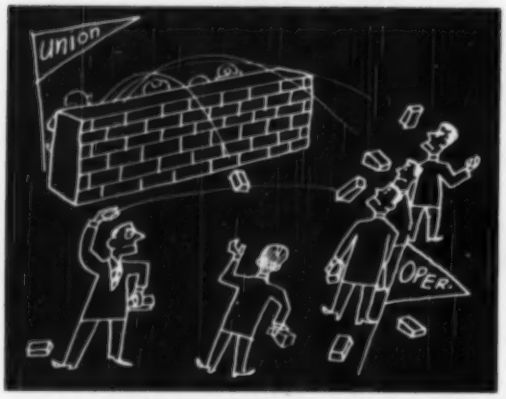
What coal, along with other industries, will have to put up with in the form of controls still is uncertain. A defense effort of the magnitude contemplated makes controls inevitable. The hazard is controls for control's sake. In fact, a craze for controls could be considered a real lift for the Communists. It would be hard to think of a better way of messing up the United States economy and the capitalistic system generally—the major Communist goal—than to get it tangled up in government controls that have behind them little of the patriotic support generated by all-out war effort but which at the same time eliminate many of the incentives of normal competition. Nevertheless, at this bewitched, bothered and bewildered juncture, that is a possibility.

The real answer to the twin problems of combating aggression abroad while preserving to the maximum degree the liberties we enjoy at home is full production based on efficient, economical use of manpower and materials. With full and efficient production, the ultimate in strength can be exerted on the battle field for a quicker, more clear-cut decision with a minimum of controls at home. Without it, rigid controls become a necessity and the difficulties of building up striking power at the front are increased.

Coal has never lacked an incentive to efficiency. Competition is always around to supply it. But since efficiency in production means maximum support of the defense effort with a minimum use of manpower and critical materials, it becomes doubly important in a period such as that which lies ahead. Increased efficiency means increased contribution to defense, decreased pressure for comprehensive and rigid controls, and improvement of the industry's ability to compete in the peacetime future. With efficiency the watchword, and with a productive capacity ample for all foreseeable needs, coal can truly report: "Ready to serve."

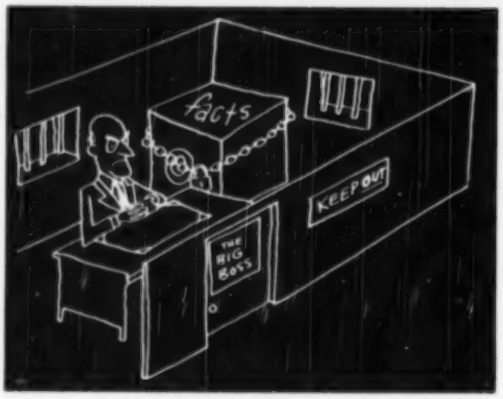
Coal Can Take These Steps to Achieve Friendly Relations and Make a . . .

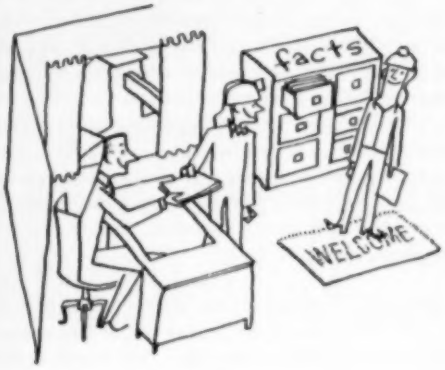
NOT THIS



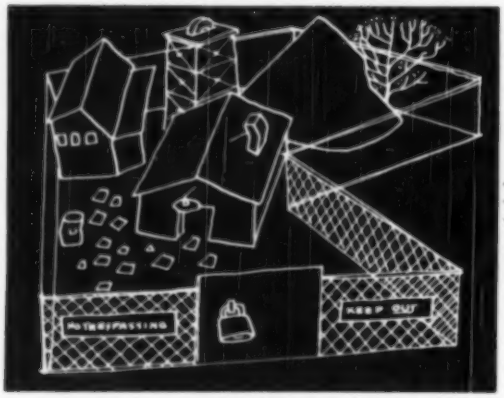
BUT THIS

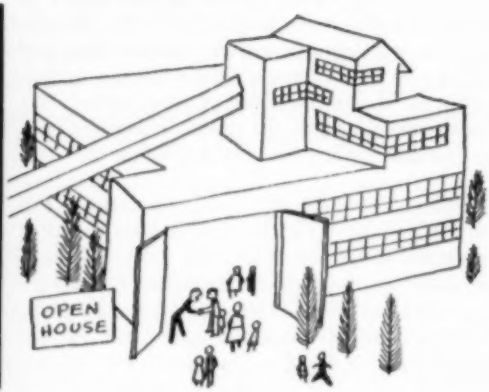
THE UNION . . . WORK FOR COOPERATION





YOUR MINERS . . . TAKE THEM INTO YOUR CONFIDENCE





YOUR NEIGHBORS . . . WIN THEIR GOOD OPINION

New Start on Labor Peace

How New Operator Unity and Organization Can...

Improve Contract Negotiations

Win Miner Cooperation

Keep Coal Free From Seizure

LABOR PEACE is a goal the coal-mining industry has sought after for many, many years. Is the industry getting any closer—and what are the main roads it can follow to get closer still?

The answer is that progress has been made—but not enough. More is a necessity. The main roads are:

1. An industry-union relationship that assures genuine cooperation between mine management and union management.

2. A company-employee relationship that assures equally genuine cooperation at the mine and company level.

Though both are equally vital, perhaps the major progress has been made along Road 1 through more effective organization of management for collective bargaining and day-to-day dealings with the union. The latest step in this direction was the formation of the Bituminous Coal Operators' Association July 11. A second organization in the bituminous industry —the Southern Coal Producers' Association—already has been in operation for a number of years, along with similar organizations in anthracite.

By giving added force and better direction to the efforts of the operators, such organization, given a fair chance and courageous, imaginative lendership, can fairly be expected to accomplish these things:

1. Improve understanding between mine and union management.

2. Promote uniform interpretation of contracts.

3. Promote understanding and cooperation between individual companies and their employees.

4. Smooth out differences among operators.

5. Equalize bargaining power between union and operators.

6. Do a better job of collective bargaining.

Naturally, these achievements won't be easy and they won't come overnight. In fact, there are some good-sized *ifs*. But the chances of success are good...

If the union accepts the new movement for what it is—an earnest effort by coal-mine management to achieve friendlier and more constructive relations with the union and its members.

If the operators submerge their differences, make common cause and approach labor- and union-relations problems in a conciliatory, constructive frame of mind.

If management and the union agree for the good of all—the operators, the miners and the Nation—to keep coal strong.

Unity is the key. With operator unity, planning and action are facilitated and made more effective. Thus, the new organizations growing up in the industry will be in better position to promote stable and harmonious relations among association members themselves and between such members and their employees. They also will be better able to negotiate basic working agreements, maintain the year-round liaison that will reduce friction and disputes over contract interpretation, and do the legal, employee-relations and public-relations jobs that past events have indicated are necessary for progress.

While a still greater degree of organization and common action is desirable—and may be considered a logical further step—the degree of unity now achieved offers a good chance for peace and progress on coal's weakest front—its relations with the union and with its employees. With unity and year-round liaison with the union, attaining better relations then boils down to about two major jobs:

1. Improving contract-negotiating machinery.

2. Winning the cooperation of the individual miner.

Improving Wage Negotiations

SINCE ACHIEVING fair and equitable wage agreements without work stoppages and slowdowns is a No. 1 objective in the new industry set-up, ways and means become a pertinent topic. The future will bring new techniques to add to or replace the old. Meanwhile, some of the road markers are:

1. Delineating Collective-Bargaining Goals—Improving the bargaining machinery naturally is an easier task when the employers—and the union—pattern their tactics to the ends they want to achieve. These are: (a) a strong industry supported by satisfied customers who think well of coal; (b) steady jobs, good wages and safe working conditions for miners; and (c) a fair profit that stimulates investment in new properties and machines, repays management men for their skills and efforts, and brings a fair return to stockholders.

2. Learning from the Past—The main import of past developments in contract negotiations is that bickering, name-calling and stubbornness are hurtful, not helpful; that disunity among operators weakens their ability to meet the union on an even basis; that neither contract nor labor law means anything unless both sides really want to make it work; and that failure by the industry to settle its own disputes brings in outsiders who impose their own brand of settlement. These are negative lessons.

On the positive side, the past teaches that successful bargaining can take place only if both sides approach the conference table in equal strength, in possession of all the facts, in a conciliatory frame of mind, with a sincere desire to serve the best interests of all, and with an affirmative, constructive set of negotiable proposals.

3. Learning From 1949-50—This was a costly lesson. But, for the first time, by sticking together under strong leadership, the operators won some concessions. They learned that if the union's power cannot be whittled down, it can be offset by strength on the operators' side of the table. A little strength won a better contract—better than most people expected, at least. It is logical to conclude that in the years ahead more

Four Groups Can Help You Get Labor Peace in Your Own Mine

I—Foremen: Make Them Your Partners

1. **Treat foremen like responsible men.** To put a foreman and a 12-man crew to work, your company invested about $150,000 in machines and equipment. So treat each foreman like top dog in a $150,000 business. That's what he is.

2. **Get their help in planning.** They know, better than you, what makes coal flow and keeps miners happy.

3. **Tell them about the business.** They're your closest link with workers. If you want your miners to know the facts, keep your foremen posted.

4. **Help them over rough spots with their men.** Not every foreman knows how to train a miner, fire a man, explain a pay envelope, bring in a new safety rule or set up a new work cycle. You can school your foremen in human relations by setting a good example yourself, teaching them practical psychology and providing them with a forum for exchanging ideas among themselves.

II—Workers: Treat Them Like People

1. **Give workers a chance to talk.** They won't listen to your troubles until they've unloaded their own. Keep your office door open. Start a letters-to-the-editor column in your company newspaper. Brighten up your employee-suggestion plan. Put a miner on your board of directors.

2. **Share the facts.** Tell miners how much money the company makes, how markets are doing, why you install new machines and change safety rules and mining methods, how much the company spends for improvements and what customers think of the company's product.

3. **Brag about them.** Through newspapers, radio and your company magazine, tell your workers and their neighbors how much coal your men mined, how much money they gave to Red Cross, what their hobbies are, who thought up a new production idea, how somebody saved a life, who hooked the biggest fish.

4. **Take families into the company.** Send your company magazine to miners' homes. Stage an annual "Family Day," with a picnic, cooking and sewing contests, a hobby show and some music and dancing.

III—Neighbors: Win Their Good Will

1. **Do all you can to win your neighbors' favor.** Keep your plant bright and clean. Trim the lawn around the office. Pave and clean up the streets. And put out that gob fire.

2. **Take part in town projects,** such as community-chest drives, recreation-center planning and clean-up campaigns. Share the load as a company and urge your officials and workers to join in individually.

3. **Start a community-suggestion plan** to learn how you can be a better neighbor. Maybe the townspeople don't know how to mine coal, but a housewife whose laundry gets dirty on the drying line can help you shape your policy toward townspeople.

4. **Take good care of visitors and guests.** See that they get courteous treatment, a comfortable waiting room and a chance to look around the property. Once a year, stage an "Open House." Invite the townspeople to look around and ask questions. Alert your foremen and workers ahead of time and give them a chance to talk to visitors about their jobs and their company.

IV—The Union: Make It Your Friend

1. **Accept the union on friendly terms.** It's here to stay.

2. **Meet often with district and local officials** to talk over problems affecting you both. After all, you're both in the coal business and you both have the same aims—a healthy industry with strong markets, steady jobs and good wages, low-cost production and financial stability. Your opinions may differ sometimes, but that's democracy. Friendly talks will clear the air.

3. **Bring the union into your planning.** Union officials can help you avoid pitfalls in your dealings with workers and, if your plans are sound, can help you win worker cooperation.

4. **Cultivate cordial personal relations** with union officials. Invite them to play golf or have lunch with you. Ask them to make a speech at the Rotary Club. If you plan a company picnic or an "Open House," bring them in on the planning and give them a share in being host.

strength can win better contracts at lower cost.

4. Putting the Findings to Work—As a result of experience over the past decade or more, a number of steps to better bargaining have become accepted as having merit. What these steps are, and how they stand in operator thinking, was the subject of an article in the April, 1949, issue of *Coal Age*. The gist of comment by representative coal men was that the following would help: a more aggressive and intelligent approach to wage talks; better public-relations methods, especially during negotiations; and a tightening up of wage-talk machinery.

Specifically, operators who participated in the poll on better negotiating methods endorsed each of the following concrete proposals by a vote of 81% or more:

A reduction in the number of negotiators.

Broader power for them.

A full-time liaison committee to maintain year-round contact with the union and bargain for new contracts.

An offer of negotiable proposals by the operators.

Organization of a public-relations agency to handle spot news about wage talks.

Cutting the length of negotiations by making written proposals prior to the opening of conferences, restricting debate to relevant issues, and leaving fringe issues and minor disputes to a permanent joint liaison group.

Winning Miner Cooperation

IMPROVING the collective-bargaining machinery is only part of the job of attaining labor peace and cooperation in coal mining. The second part—promoting stable and harmonious relations between individual employers and their employees—is even more urgent. Better employee understanding and cooperation are critical because if such understanding and cooperation prevail, the result is automatic restriction of arbitrary action by union management and the forcing of a policy of reason and fairness in dealing with mine management and the public.

The key is convincing the miner that his welfare is the foremost concern of his employer and of the industry. Along with this job of promoting cooperation by creating understanding of the facts goes the job of making it easy for the miner to think of himself as a part of the company team.

Mine management wants to provide good jobs, high wages and safe working conditions. Mine management also wants to maintain the markets that will support and guarantee these benefits. Convincing the miner that these are the facts will be a big step in the direction of improving labor relations.

Attaining this goal requires both national and local effort. National organizations can do the research, develop the broad principles and supply many of the facts and tools. Companies, mine organizations and supervisors can work intimately with their own men.

The average miner is convinced that his company is a good outfit that gives him a square deal. But the hard fact is that, so far, he is even more convinced that mine management as a whole is hard-boiled and selfish. It is, therefore, the task of both national organizations and individual companies to set him straight and win his cooperation. The foundation already exists in miner confidence in his own employer. The job is to build on that foundation.

Nationally, some of the suggestions are:

1. Establish a friendly, constructive and informed relationship with union management on a year-round basis.

2. Create machinery that will insure quick, fair agreements with union management on debatable contract clauses and on minor grievances before they become major issues.

3. Set up an organization that will keep operators informed about contract terms and interpretations.

4. Develop a program of reaching the miner with the facts he should know about the industry and his stake in it.

5. Prepare material that the individual operator can use with his own men, and provide suggestions and guidance in its use.

Locally, some of the suggestions for promoting miner understanding and cooperation are:

1. A firm resolve to live up to the letter and spirit of the contract, particularly in safety and wage matters.

2. Thorough grounding of all management and supervisory personnel in the facts, in methods of promoting better relations and in methods of winning cooperation.

3. Use of all available methods of keeping miners informed about industry and company problems—letters, word of mouth, posters, etc.

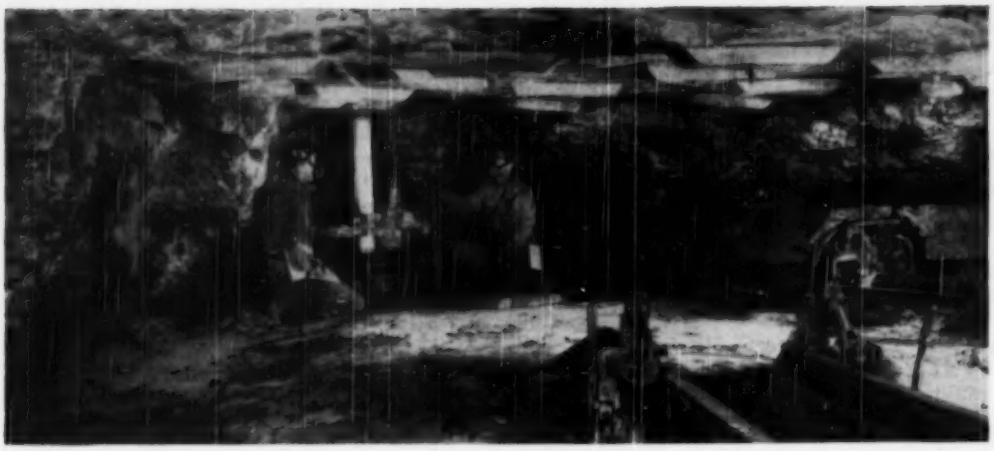
4. Establishment of machinery—formal or informal—to give the miner an opportunity to contribute, if and when he desires, in the fields of production efficiency and greater safety.

5. Use of all available methods for stimulating the miner to identify himself with the company. These range all the way from sponsoring mine and company ball teams to reporting to miners on the current market for coal.

Building for the Future

THE NEED for real cooperation and understanding between management and men in the coal industry is emphasized not only by the events of the past but by the needs of the future as the Nation moves further into its defense program. With the program shoved into high gear, another operator-union embroilment like those of recent memory would provide certain quarters in Washington with the opportunity they keep looking for: government seizure of the mines, nationalization of the industry, and the end of freedom for employer and miner.

Real progress has been made. More, however, is needed. The new program of the industry needs not only more support but also the benefit of intensive effort to develop policies and machinery on both the national and local fronts that will insure the desired end. That end might well be a degree of cooperation that would find mine management, union management and men cooperating not only in promoting labor peace but also in supporting production and preparation improvements, market research and public relations.



BOLTING AT THE FACE, using electric drill on a special mount built in the mine shop. Now, the mounts are rubber-tired (p 106)

How Boone County Coal Corp. Goes About . . .

Roof-Bolting for Efficiency

Split-Rod and Expansion Bolts Used
Roof Suspended or Converted Into Beam
Tons per Man Raised 55 to 100%

TONS PER MAN-SHIFT doubled in one type of mining, increased about 75% in two other types, but no increase in a fourth—that sums up the results of roof-bolting to date in the mines of the Boone County Coal Corp., Sharples, W. Va. Both split-rod-and-wedge and expansion-shell types of steel bolts are being used in a ratio of approximately one of the former to two of the latter, with experiments being continued with the preferred expansion-shell type. A small-scale experiment with wood pins has not provided results one way or the other to date.

The Sharples plant produces 3,000 tons per day from two splits of the Chilton seam. Low coal of varying thickness and a wide range of roof characteristics called for a learn-as-you-go bolting program. The first bolting of the split-rod-and-wedge type was done on a haulway in March, 1949. Now, in one form or another, roof-bolting is used in most sections of the mine, the exception being in a section operated with hand-loading into mine cars and onto chain conveyors, under which conditions bolting proved of no advantage.

● **Coal and Top Conditions**—The right side of the mine is in the upper split, averaging 48 in and ranging from 40 to 64 in. The top consists of 6 to 18 in of clod which has no structure. Above it lies 1 in of coal, then a weak to firm shale.

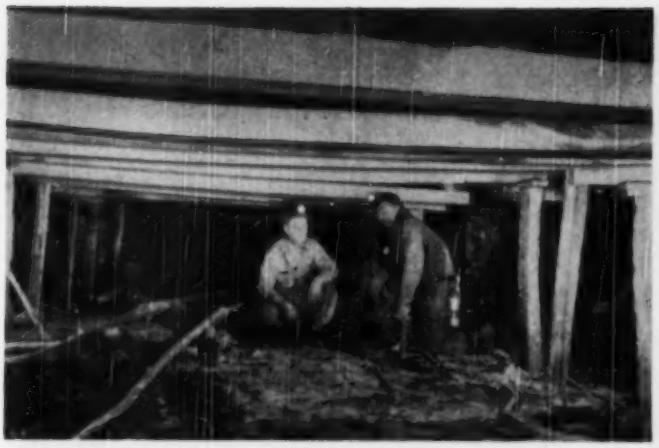
The left side is in the bottom bench, averaging 45 in and ranging from 36 to 50 in. The top is a bedded shale which, in places, has a sandy character. This top is the parting between the benches or splits and its thickness ranges from nothing to 16 ft.

The first bolting on a haulway was in the top bench where the function is supporting the clod from the stronger stratum above, rather than tying strata together to form a beam. Drilling was done with an air stoper, the bolt was driven onto the wedge by air, and the nut was tightened with a torque wrench. One-inch bolts 48 and 60 in long were used.

About five months later, in August, 1949, bolting was adapted to the mining cycle in the thinner bottom bench, where production is by Joy loaders into shuttle cars. In both entries and rooms 4x6-in wooden crossbars on 3-ft centers were required to hold the shale top. Here again, air equipment and split-rod-and-wedge bolts were used. The next application, also with air equipment and split-rod-and-wedge bolts, was in a duckbill section in the bottom bench, where the same number of crossbars had been required.

● **Good Results Attained in Machine Loading**—In all instances, favorable results were achieved. Before bolting, all development work in the top bench required handling the clod and weaker shales above. In one section of room work, where a 12 BU machine loaded onto chain conveyors, the unit had to gob the clod as the coal was removed. Results of this first roof-bolting in the machine-loaded conveyor section were very good, but a change of technique has afforded further improvement.

In the meantime, it was found that where two duckbills were working on development in the top split, the roof could be drilled with an electric drill fitted with tungsten-carbide bits. Consequently, a special drill mount was developed in the mine shop. With it, bolting



BEFORE BOLTING—Conventional timbering in room-entry air course.

AFTER BOLTING—Half headers and steel washers hang clod from stronger strata.

was started in a duckbill development section in the top split.

• **Production Raised 55 to 100% in Mechanical Mining**—Production per crew man, including the boss, was increased 75% in duckbill development. In this work the 1-in bolts were set by hand with a sledge, 3x10x24 wood blocks were used as caps to support the clod, and the nuts were tightened by hand. The quantity of top material handled was reduced to zero. In all instances, the bolts were placed on 4-ft centers starting 2 ft off each rib.

That first application of bolts on the Joy and shuttle-car section in the bottom bench produced only about 20% increase in tonnage per crew man because stoper drilling could not keep up with the loading machine. After electric drilling with the special drill mount proved successful in the duckbill section, it was applied to a section in the same split where a 12 BU loaded onto chain conveyors. Here, the increase in production over methods before bolting was applied was roughly 100%.

Bolting with electrical drilling equipment in a five-heading entry driven with a 14 BU and shuttle cars, and where top slate had been handled, raised the tons per loading unit 55%.

Only in hand loading onto chain conveyors did bolting prove to have no advantage. Here, the clod is held by posts and cap pieces set on 4-ft centers. As many as 22 safety posts are used on a 30-ft face. With bolting, the roof-support material cost nearly doubled, the labor for roof support was about the same, tonnage per man was not materially increased, and safety was not affected. Result: the section is again operated with conventional timbering.

• **Drilling Practice**—Holes are drilled 1¼ in for split-rod-and-wedge bolts and 1⅝ in for expansion shells. Kennametal, Firthite and Carbit tungsten-carbide bits are being used. Two makes of expansion shells are being purchased: Ohio Brass and Duquesne Supply. Only recently has the last of the air equipment been replaced by electric drills, and the complete change will bring performance figures better than those cited in the preceding paragraphs.

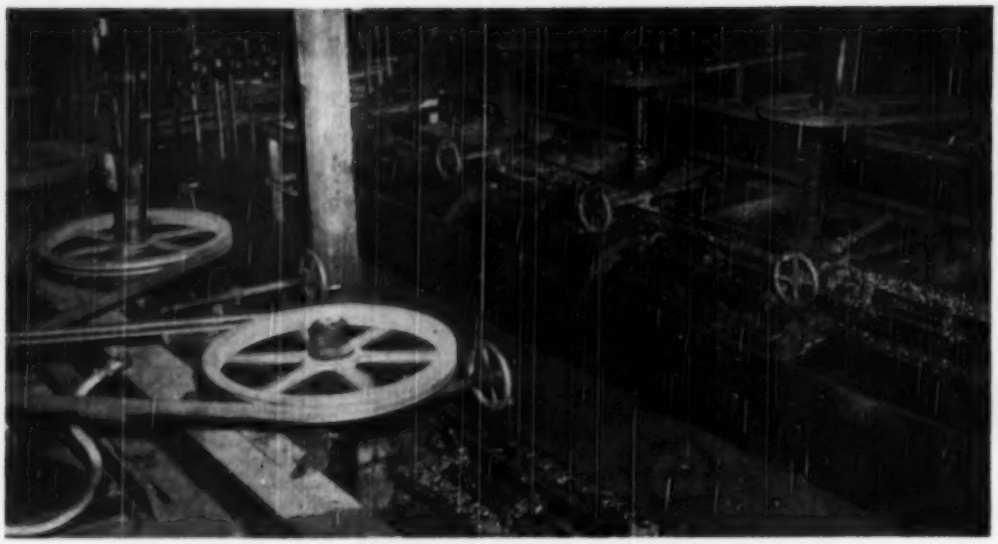
Bolts 36 in long are being used in the top split, where the top is being more or less suspended from the stronger strata. In the bottom bench, where a definite beam action is secured, the bolts are 42 in long.

The drill mount developed in the mine shop to accommodate the Jeffrey A7 electric drills is described in the Operating Ideas section of this issue, p 106. Twelve of these mounts now are in use. The drill mount included in the duckbill-section roof-bolting photograph is the original before being placed on rubber tires.

• **Wooden-Pin Experiments**—Experiments with wooden pins were started at Sharples late in 1949. The first trial was with 2½-in straight-grain hickory pins. However, this size was given up when it was found that drilling a 2½-in hole with a stoper was a very slow job. Next, some 1⅝-in hickory pins were made and 38 were installed in holes drilled by a stoper. Where they were placed, the roof happened to be so good that it would have held anyway. Therefore, nothing has been proved. It is the intention, however, to make some additional experiments with the hickory pins.

Edward H. H. Greenwald, assistant to the general manager, has supervised the roof-bolting development for the company. H. L. Copher is mine superintendent, T. W. Cline is general mine foreman, and A. S. Wilson is vice president and general manager.

The photographs illustrating this article were taken in the Boone County mines by representatives of the U. S. Bureau of Mines.

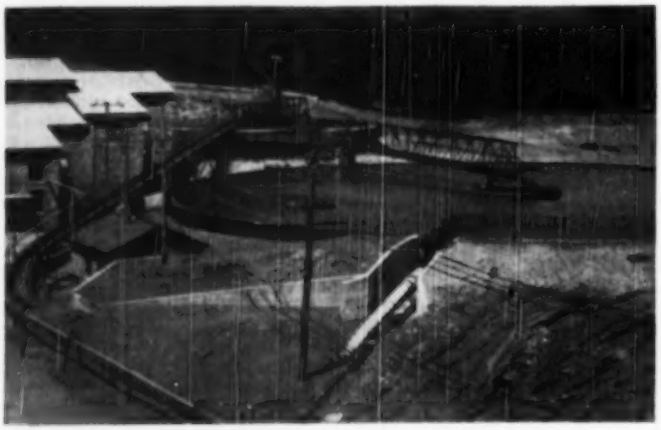


PRIMARY FLOTATION in these 100-cu-ft cells recovers the bulk of the coal in washery water.

Clear Water and Marketable Fines Are End Results of . . .

Froth Flotation at Tamaqua

Water Discharged to Surface Streams or Recirculated to Preparation Plant Practically Free of Solids—Froth Flotation and Effective Drying Recover Valuable Fines for Use in Pulverized-Coal Burners



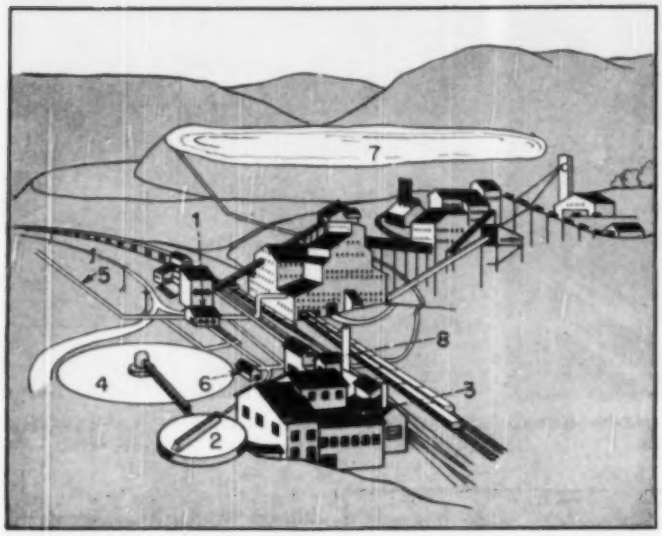
HYDRAULIC CLASSIFIER (background) prepares washery waste for treatment in the flotation plant (left). Thickener (foreground) clarifies water for recirculation and prepares waste for final disposal.

FROTH FLOTATION of anthracite fines on a commercial basis at Tamaqua colliery, Lehigh Navigation Coal Co., Lansford, Pa., benefits both company and public. Operating on a two-shift basis, the plant recovers an average of 525 tpd of marketable product from the washery water discharged by the cleaning plant, and excess water now entering public streams from the Tamaqua operation contains less than 0.01% solids.

Lehigh Navigation set up a pilot plant for flotation experiments in 1942. Success in the pilot plant was followed by construction of the commercial plant in 1945.

What Flotation Does

Briefly, the process consists of classifying and thickening the washery water and solids discharged by the main cleaning plant and then pumping this pulp into the flotation plant for treatment. This feed is conditioned in the flotation plant by the addition of fuel oil and pine oil before each of two flotation steps. Primary flotation removes the bulk of the coal and scavenger flotation makes a



WASHERY WATER, containing fine coal and refuse, is pumped by a centrifugal pump (1) through an 18-in cast-iron pipeline to the 75-ft classifier (2). Solids coarser than 200-mesh are separated in the classifier for treatment in the froth-flotation plant (3). The minus 200-mesh high-ash fines overflowing the classifier and the refuse from the flotation plant are collected and carried in a trough to the center of the 180-ft thickener (4). Clarified water over the weir of the thickener is collected and recirculated to the main preparation plant by a 5,000-gpm pump in the pumphouse (5) and excess water drains to the creek through the channel (5). Settled solids in the thickener are raked to the center discharge well and pumped by an 800-gpm pump (6) to the impounding basin (7) at the top of an abandoned refuse dump. Flotation coal is dried in a rotary heat drier in the plant addition (8) and loaded into railroad cars for shipment.

TAMAQUA CLEANING PLANT uses froth-flotation to insure clear make-up water for the washery and minimum solids in waste water.

final separation on the tailing from the primary cells. Flotation coal produced in these two circuits is dewatered and heat dried, and final refuse from the scavenger cells is thickened and pumped to an impounding basin.

Make-up water for the cleaning plant is taken from the clarified overflow of the refuse thickener, and excess overflow from the thickener and impounding basin enter surface streams in full compliance with Pennsylvania's anti-stream-pollution requirements.

The cleaning plant at Tamaqua colliery produces wet-cleaned anthracite in all commercial sizes down to special No. 5 buckwheat through 3/64-in round holes. Water used in the cleaning processes leaves the plant at a rate of 9,000 gpm with 4% solids by weight.

How Flotation Works

The steps in recovering flotation coal from washery water are shown in the accompanying flow diagram.

A 9,000-gpm 125-hp centrifugal pump elevates the washery water from a collection sump to a 75-ft-diameter Denver Hydroclassifier to make a separation at 200-mesh. Hydroclassifier overflow containing the minus 200-mesh fines flows to a 180-ft-diameter Dorr thickener for settling of the fines and eventual pumping to the impounding basin, along with the final refuse from the flotation plant.

The underflow from the 75-ft Hydroclassifier is the feed to the flotation cells. It contains the plus 200-mesh material from the Hydroclassifier and, for best results, should not contain a size larger than plus 28-mesh material. Excess coarse material deadens the froth and results in low recovery. Experience shows that highest effi-

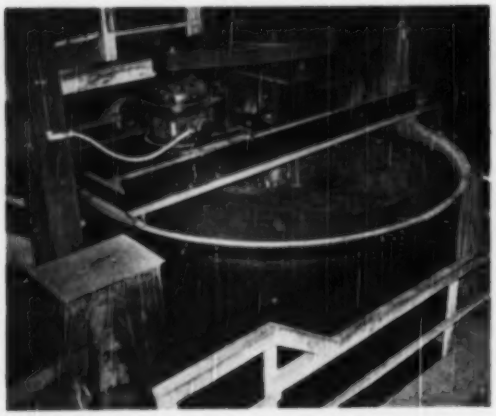
Table I—Operating Data for 75-ft Hydroclassifier, Primary-Flotation Circuit and Scavenger-Flotation Circuit, Tamaqua-Colliery Flotation Plant

	Hydroclassifier			Primary Flotation			Scavenger Flotation		
	Feed	Underflow	Overflow	Feed	Coal	Refuse	Feed	Coal	Refuse
Quantity, gpm	9,000	560	8,440	1,360	280	720	360	25	335
Solids, % by wt.	4.1	35.0	1.0	19.0	40.6	9.6	15.4	41.3	11.7
Solids, tph	91.0	60.0	31.0	52.0	33.5	18.5	13.2	3.1	12.1
Recovery, %	100.0	67.0	33.0	100.0	64.5	35.5	29.2	6.0	23.2
Ash, %	32.3	30.1	42.9	30.1	13.0	60.8	61.4	26.1	70.7

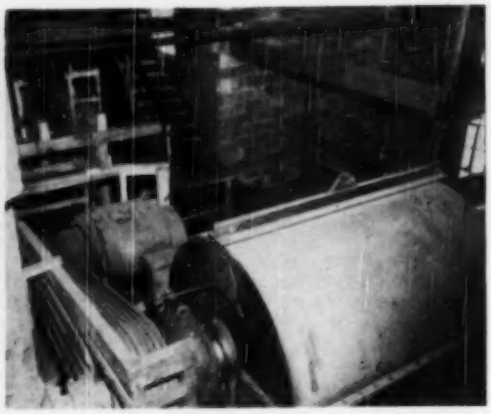
Screen and Ash Analyses—Weight and Ash in Percent

	Hydroclassifier			Primary Flotation						Scavenger Flotation					
				Feed		Coal		Refuse		Feed		Coal		Refuse	
Mesh	Feed Wt	Underflow Wt	Overflow Wt	Wt	Ash	Wt	Ash	Wt	Ash	Wt	Ash	Wt	Ash	Wt	Ash
+ 28	7.4	7.5	0.0	3.7	11.3	5.7	8.8	1.5	14.2	3.5	16.9	2.5	14.9	3.8	16.4
+ 48	17.0	24.5	0.4	20.7	18.2	21.4	9.2	10.9	32.9	14.7	46.4	17.8	15.6	14.2	48.4
+ 100	20.4	34.5	0.4	34.0	27.9	34.0	12.8	26.5	60.5	31.2	66.1	31.9	24.6	32.2	73.7
+ 200	13.6	23.5	2.2	23.2	33.4	24.7	13.9	24.8	65.8	28.1	66.6	29.9	26.3	26.7	76.1
—200	39.5	10.0	97.0	18.4	46.4	14.2	19.5	36.3	70.0	22.5	72.1	17.9	30.6	23.4	79.4
	100.0	100.0	100.0	100.0		100.0		100.0		100.0		100.0		100.0	

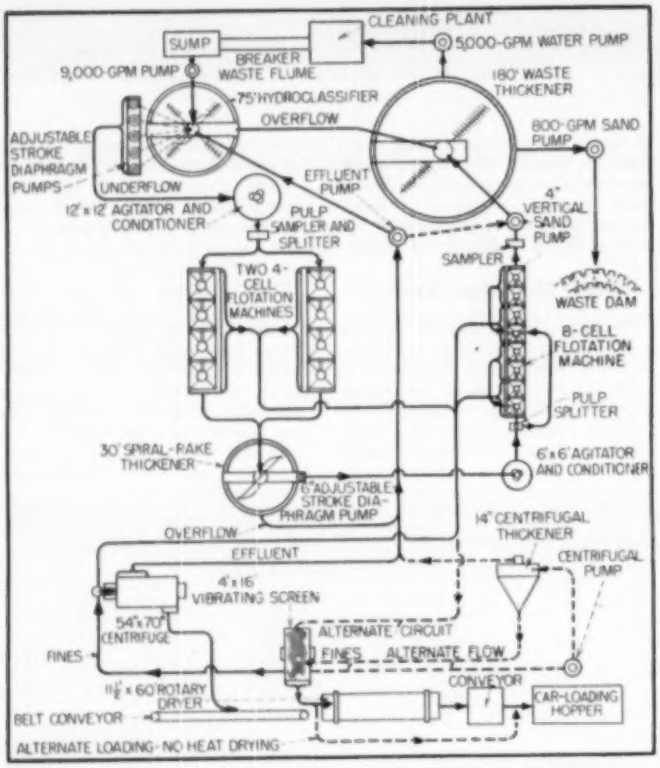
How Froth Flotation Recovers 525 TPD of Marketable Fines at Tamaqua



AGITATION and addition of reagents in this 12-x12-ft conditioner prepare pulp for primary flotation.



DEWATERING CENTRIFUGE reduces moisture in froth to about 26%. This 54x70-in unit requires 70 kw in producing 40 tph.



PLANT LAYOUT provides flexibility for recirculating flotation products and makeup water.

ciency is obtained when all feed is minus 35- or 48-mesh.

The classified feed is pumped from the hydroclassifier to the flotation plant by five 6-in adjustable-stroke Denver diaphragm pumps at approximately 35% solids and then flows by gravity to a 12x12-ft heavy-duty Denver agitator and conditioner.

The fuel-oil collector and pine-oil frother are added to the pulp, which is conditioned for approximately 13½ min by a 36-in-diameter propeller rotating in the agitator at 185 rpm.

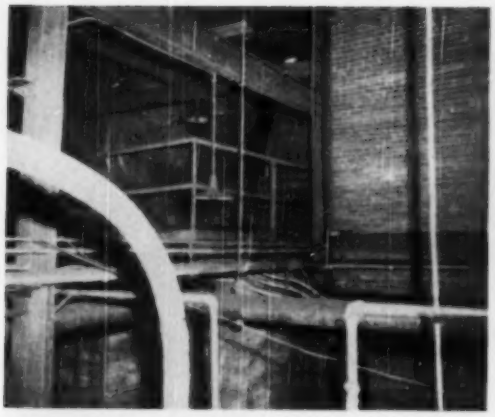
Conditioned pulp is passed through a Denver sampler and splitter, diluted to about 20% solids and then fed to the primary flotation cells.

The primary circuit consists of two parallel banks of four-cell Denver No. 30 "Sub-A" flotation machines, each cell having a capacity of 100 cu ft.

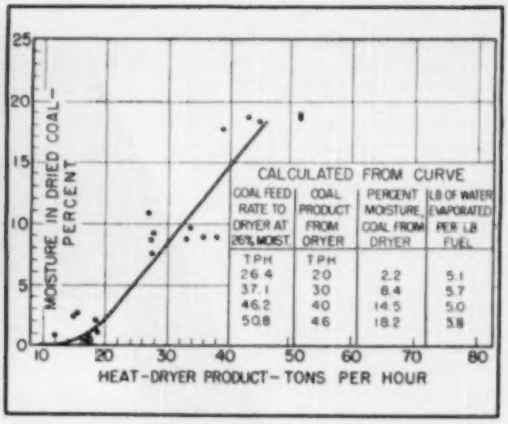
Low-pressure air, at 6 to 8 oz per sq in, is supplied to the cells by a 1,000-cfm turbo-blower to promote frothing. The bulk of the flotation coal is recovered in the primary cells in 6 min.

Tailing from the primary circuit contains recoverable coal in a pulp of about 10% solids. Therefore, it is rethickened in a 30-ft-diameter spiral-rake Denver thickener to 30% solids. Then it is pumped from the thickener to a 6x6-ft Denver conditioner by another diaphragm pump for a 15-min conditioning prior to scavenger flotation. This treated primary-circuit tailing, which is now scavenger-circuit feed, is passed through another splitter, diluted to 15% solids and fed to two four-cell banks of 24-cu-ft scavenger cells. These scavenger cells are the original pilot-plant equipment.

Make-up flotation reagents are added to the cells in both primary and scavenger circuits as needed. Approximately half the required reagents are added in the conditioners preceding each flotation circuit and the remainder is added to Cells 2, 3 and 4 in each bank. Combined cost of fuel oil and pine oil is approximately 7c per ton of flotation coal. Flotation coal from the scavenger circuit is relatively high in ash but is blended with the pri-



ROTARY DRIER reduces moisture of centrifuge or vibrating-screen product to approximately 8% at a rate of 30 tph.


MOISTURE IN DRIED COAL—PERCENT
HEAT-DRYER PRODUCT—TONS PER HOUR
CALCULATED FROM CURVE
COAL FEED RATE TO DRYER AT 26% MOIST.
COAL PRODUCT FROM DRYER
PERCENT MOISTURE, COAL FROM DRYER
LB OF WATER EVAPORATED PER LB FUEL
TPH
TPH
26.4 20 2.2 5.1
37.1 30 8.4 5.7
46.2 40 14.5 5.0
50.8 46 18.2 5.8

DRYER PERFORMANCE CURVE shows how low-moisture specifications reduce drier capacity.

mary flotation coal to give a final plant product with an ash content of 10 to 12%. Flexibility in the plant permits the scavenger product to be returned to the secondary cells for recleaning to reduce the ash content.

The refuse from the scavenger circuit is the final reject of the flotation plant. It is pumped by a vertical 4-in Denver sand pump to the 180-ft-diameter thickener outside the plant, where it joins the overflow from the 75-ft Hydroclassifier, as previously noted. Solids settle in the thickener and are pumped to an impounding basin 1,600 ft away by an 800-gpm sand pump (Goyne) through an 8-in cast-iron line. The impounding basin is constructed on an abandoned refuse dump.

Clarified water from the thickener is recirculated to the breaker by a 5,000-gpm pump (Ingersoll-Rand) and excess water from the thickener is directed to a surface stream.

Dewatering and Drying

Officials of Lehigh Navigation's preparation department agree with all others engaged in fine-coal preparation that dewatering and drying are the major problems. Therefore, continuous investigations to increase drying efficiency are in progress at Tamaqua.

At present, the froth from the flotation circuits is dewatered in a Bird centrifuge. The Bird product is further dried in a Traylor rotary drier. A dewatering screen and a 14-in cyclone thickener are installed as a standby in case the centrifuge breaks down. However, use of screen and cyclone has been limited.

The solid-bowl-type 54x70-in Bird centrifuge receives the froth as produced and turns out a cake that averages 26% moisture. Solids in the centrifuge effluent consist mainly of high-ash fines. Thus an estimated 1% reduction in final ash is made in the centrifuge. Most of the effluent, which carries about 1.3% high-ash solids, is pumped to the 180-ft refuse thickener. Performance has been improved by installing a double spiral conveyor with Colmonoy-coated blades instead of the single spiral conveyor.

A 4x16-ft dewatering screen (Robins Eliptex), recently developed for dewatering coal sludge, together with a 14-in cyclone, was added to the plant as a supplement to the centrifuge. The vibrating screen is elevated at the discharge end, thus retarding the flow of water, and five dams across the last 8 ft of length retain the coal for sufficient time and in sufficient depth to squeeze out much of the moisture. The screen undersize is pumped to the cyclone and the thickened product is returned to the screen near the discharge end.

Dewatered coal from the vibrating screen or centrifuge drops to a belt conveyor which discharges direct to a railroad car, or through a feeder to the heat drier if less than 25% moisture is specified for the finished coal.

The Traylor drier is an indirect-direct unit. Hot gases from the separate stoker-fired furnace are conducted the full length of the drum between the drum and a brick housing by baffles built into the housing. The gases are then conducted through a duct to the interior of the drum and back through the drum to cyclones and exhausted to the atmosphere.

The 11½-ft-diameter 60-ft-long drum is installed on a slope of ½-in pitch per ft of length and rotates at 6 rpm. The slope and rate of rotation determine retention time for the coal in the drum.

The heated gases from the furnace are tempered to 1,200 deg by a thermostatically-controlled damper in the inlet duct. Exhaust gases leave the drier at 170 deg after passing through an eight-cell Buell dust collector.

The 8x20-ft traveling-grate stoker burns fine coal from a feed hopper. Coal feed, grate speed, inlet and outlet dampers, and blower and exhaust fans are automatically controlled to keep inlet and exhaust gases at specified temperatures.

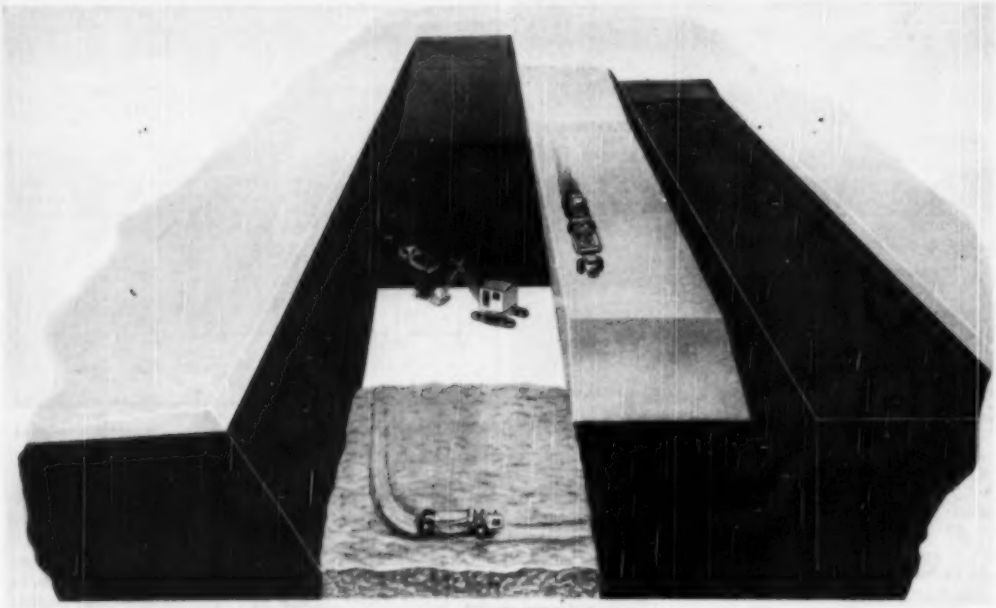
The rate of fine-coal drying depends on the moisture specified for the dried product, and low-moisture specifications reduce dried-coal output, as shown in the chart.

Long-term storage of fine coal is also effective in reducing moisture, and storage facilities are maintained for some customers.

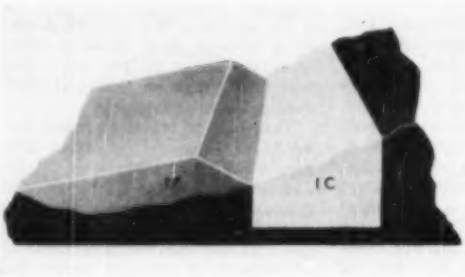
Lehigh Navigation, as noted, is continuing research in fine-coal preparation, and company officials state that much thought and effort are now being given to improve the drier efficiency.

Preparation investigations are in charge of C. D. Rubert and W. J. Parton, assistants to the general manager; E. E. Rickert, superintendent of preparation; M. J. Cook and W. T. Turrall, preparation engineers; F. Kemery, general outside foreman; and R. B. Scutta, plant foreman.

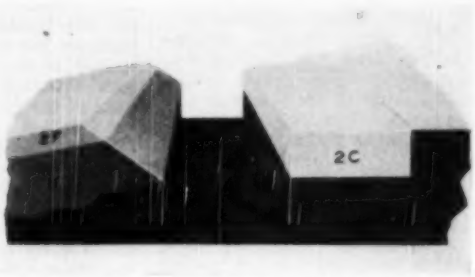
How Planned Operation Enhances Land Value With . . .



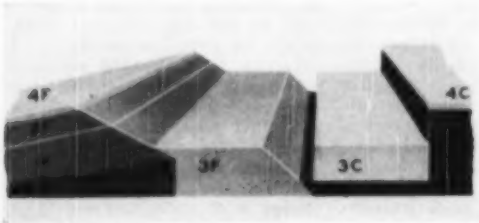
STRIPPING FOR LAND IMPROVEMENT, showing lower overburden movement to mined-out area. Top overburden already has been hauled around open pit to finish backfilling previous cut. Topsoil from next stripping area also has been removed and replaced on completed cut (left).



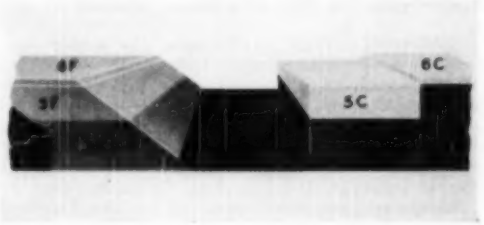
OPENING CUT—Beginning at the outcrop or close to the property line, overburden is removed to the coal and placed alongside open pit. Drainage from adjacent property is maintained away from working area. Spoil movement is from 1C to 1F.



SECOND CUT—As coal is loaded out of the first cut, about half the overburden from the second cut is hauled around the end and placed on top of the spoil from the first cut. The movement is from 2C to 2F.



SECOND CUT—Lower half of overburden from this cut is backfilled in mined-out portion of first cut, following coal loading as closely as possible. In balanced production, Overburden 3C should be shifted to worked-out pit, 3F, by the time all coal is loaded. The topsoil from third cut, 4C, is hauled around the end and placed on top at 4F.



THIRD CUT—Repeat. Top half of overburden from third cut is hauled around end and backfilled in half-filled first cut, 5C to 5F. Then topsoil from fourth cut is hauled around end, 6C to 6F, to complete backfill on opening cut. Lower portion of overburden from the third cut will be spoiled in mined-out second cut, working closely behind shovel.

High-Speed Scraper Stripping

A Plan for Land Improvement as a By-Product of the Mining Operation Based on Synchronized Overburden Removal, Spoil Disposal and Replacement of Topsoil

By D. K. HEIPLE

Chief Field Engineer, R. G. LeTourneau, Inc., Peoria, Ill.

MODERN HIGH-SPEED CARRYING SCRAPER—already accepted as an auxiliary tool in conventional open-pit work, in addition to stripping in its own right—also can be applied to the improvement of marginal land (below) by modifying the stripping plan.

ALTHOUGH THE ROLE of the scraper unit in coal stripping has been primarily that of an auxiliary tool, conditions do exist where the economics of scraper operation can be justified through the improvement of marginal land as a by-product of the scraper operation.

In the usual open-pit work, of course, the shovel or dragline is the primary stripping unit. On many casting operations, these big strippers remove overburden at such a low unit cost that other methods have little chance. On the other hand, available shovel equipment cannot always handle the overburden in one pass, thus necessitating multiple passes or rehandling. Occasionally, also, a shortage of spoil room calls for a partial hauling operation.

Under conditions such as these, the high-speed rubber-tired carrying scraper and prime mover has been well accepted as an auxiliary tool to remove the top lift. Once loaded, the unit can haul several hundred feet at little added cost.

Where the goal is land improvement, basic requirements are that the ratio of overburden to coal must be within the present economic limits applying to any method, and that no large quantities of rock are present or, if present, can be easily handled by rooting. Actual depth of overburden has little effect, since the scraper works with equal efficiency in light or heavy cuts.

The work is planned with a minimum of grades and, as shown in the accompanying illustrations, takes place in at least three lifts, including placement of the top soil. As the depth of overburden increases, it might be advisable to add another lift rather than increase grades, even though this requires a greater area in process at one time, and slightly longer hauls.

Mined-out areas are left in a level condition, with drainage established to stop erosion and with the original topsoil still on top. In addition, with the coal removed and hard pan, shale or other rock ledges broken and replaced in a loose rather than impervious layer, surface water can percolate into the underground system.

In the backfilling operation, tire pressures should be reduced to the practical minimum, and the scraper spread should be deep as possible to avoid compacting the soil unnecessarily. Thus, badly eroded plow ground, rolling pastures or scrub timber land are converted to relatively level, well-drained, tillable acreage.

DUE FOR COMEBACK? This loader-conveyor installation went into service in May, 1936. Now, with new developments in design and application, the conveyor seems to be headed for greatly expanded use behind loading machines and continuous miners.

What's Ahead in Coal Mining

A Roundup of Significant Developments and Trends In Production, Preparation and Safety

THE STATEMENT that the past few months have seen more new developments than the preceding several years is receiving additional confirmation as mining men and manufacturers continue to come up with new ideas and new production records. As examples, new highs in tons per man are reported for thin coal, bolting now is applied to holding ribs and bottom rather than roof alone, and new drying units are expected to provide cheaper and more efficient moisture reduction in preparation.

50 Tons in Thin Coal

Last month, in reporting on the use of the bridge conveyor between loading machines and room conveyors, pioneered at Crichton No. 4 mine (p 70, August *Coal Age*), it was pointed out that peaks of 45 tons per man at the face had been achieved up to the time the article was approved, and that 50 tons or more was the goal. Coal thickness is 40 to 42 in.

Since that time, the editors have been advised that peaks of 50 tons per man have been reached in 45-in coal at a southern mine operating with crawler loaders and shuttle cars. A key factor in the high performance, it also was reported, is a bonus system for the section foremen.

Thus, it appears that the coal industry definitely is headed for substantially higher tons at the face in both thick and thin coal. Whether it is headed for an equal increase in over-all tons, all men at the mine, still is a question, though increases at the face tend to improve the over-all picture. However, as pointed out in the July *Coal Age* (p 72), service labor is the bottleneck, and maximum efficiency can be obtained only when service efficiency has been raised to the limit.

New Auger Horizons

From a tool for extending recovery or mining from an outcrop or strip pit, evidence is accumulating that the big auger will find growing use underground. Several eastern and southern operations are working on plans for using such machines, while in the West one mine was experimenting with the auger for crosscutting in pitching coal, and a second was reported to be using an auger as a production machine on the pitch. And somewhat along the same lines, experiments are again being carried on with long-hole drilling in pitching anthracite for recovering pillars.

Telescoping Belts

While, on the basis of preliminary results, a bright future is forecast for the bridge conveyor, experiments are continuing with other forms of room transportation, particularly belts and particularly for use behind continuous mining machines. One idea, though first tried out many years ago, is the telescoping belt conveyor. Good results are reported from an installation in the southern mine. While stops must be made to extend the conveyor, the number is reduced by the telescopic feature, and the net result, it is stated, is that the working time of the machine is increased.

Also, at the Huntington meeting of the Mine Inspectors' Institute of America, J. J. Snure, production manager, Rochester & Pittsburgh Coal Co., had this to say about some of the new ideas in transportation behind continuous miners:

"Studies are being made of low-type high-capacity surge bins with both mobile short-section belts and portable short-section belts. The most likely plan so far is that of a short telescoping mobile belt worked in conjunction with a light two-ply belt, which is 24 in wide. This belt set-up is planned for a 600-ft place and has a speed of 400 fpm."

Two-Conveyor Set-up

"Almost-continuous" mining has been achieved with another variation in conveyor use at a southern mine. Places are driven 60 ft wide and a room conveyor is laid on each side. Half the face is cut and then loaded by a crawler machine onto one of the conveyors. Then, the other half is cut, the two machines alternating back and forth.

Semi-Longwall Mining

Late reports indicate that the Dominion Coal Co. Ltd. has proved the possibility of using a specially designed continuous miner on a semi-longwall in Nova Scotia. As a result, a production-type machine is under construction for regular use when completed. Plans also were under way at a United States mine for using a conventional continuous miner on a long wall now being developed.

Shuttle-Car Door

Good success is reported with a new type of door for use with shuttle cars at a northern mine. While details are not yet available, the door is designed for being bumped open from either side and yet to return to center and stay put for a proper air seal.

Stainless Belts

Experimental work toward the development of a satisfactory stainless-steel belt for conveyors is going forward with encouraging results still being reported. Among the late developments in the field is the design of a new pulley for stainless belting that automatically centers the belt yet is reported to be so simple that it can be fabricated on the job out of pipe and plate. If experimental installations prove the design, plans are laid for a production test in a coal mine.

Diesel and Aluminum

Though banned in coal mines in the United States, the diesel truck and the diesel locomotive continue to make gains in metal and nonmetallic mines in the United States and coal mines in Canada. A number of mining operations on both the East and West coasts of Canada are expanding the use of diesels underground, and one, after two years or so of trying aluminum cars, is placing an order for a substantial number. Weight savings and resistance to corrosion are among the major advantages, and the test cars, it is reported, stand up well under impact and abrasion.

The Surge Conveyor

With much of the present history in belt-conveyor transportation being made by the Pardee & Curtin Co., it is no surprise to find that organization coming up with a new improvement. That improvement—a surge conveyor for feeding the main-line system—has materially increased efficiency. Details can be found on page 102 of this issue.

Bolting—High and Low

Some evidence of what roof-bolting means in terms of increased efficiency in mechanical mining is presented in the Boone County story on p 74-75 of this issue.

Next month *Coal Age* will present a description of what bolting has accomplished under extremely difficult conditions at the Kaiser mine in Utah. Here, bolting has achieved results possible with no other method of roof support.

Meanwhile, new developments include the following:

1. Bolting to prevent sloughing of ribs and bolting to prevent heaving of bottom. The editors are now moving to get the data on the initial experiments with bottom-bolting for presentation in the first available issue.

2. Development of a new face unit that will permit combining face-drilling and roof-bolting.

3. Announcement of the results of tests to determine the effect of lubricating bolt heads on the torque required to establish specified tension in roof bolts. Made by the Ohio Brass Co. and reported in a recent issue of *O-B Haulage Ways*, the tests suggest that the following torques be employed:

Bolts without flash—dry, 175 ft-lb; with lubrication under the head, 125 ft-lb.

Bolts with flash—dry, 135 ft-lb; lubricated, 125 ft-lb.

4. Use of a hollow-center jack for testing roof-bolt anchorages at a southern mining operation. Fast testing and accurate results are stated to be the major advantages.

Fine-Coal Cleaning

The feldspar jig, or other specially-design unit, is now being increasingly considered as a possibility for cleaning fine coal in the United States. In Europe, the feldspar unit has found wide use for this purpose, with the following advantages claimed: good results and high capacity per square foot of floor space. Pending possible initial installation of feldspar or other equipment for test purposes in the United States, increasing emphasis is being laid on flotation, table-cleaning and cyclones.

Air-Cleaning Results

Reports indicate that the initial installation of the vacuum jig—an air cleaner without blowers, exhausters and dust collectors—will provide results equivalent to those achieved with some of the less efficient wet washers. This is, it is stated, far ahead of average dry-cleaning performance.

Heat Drying

Two new thermal dryers, offering substantial increases in drying efficiency, are now in the process of making their bows to the mining industry. Research has been completed on one and the other started operation in Illinois early in August.

Unit No. 1, to be installed by the Westmoreland Mining Co., mining in Pennsylvania and sponsoring development at Battelle, operates on the fluid-bed principle. In other words, the coal, in effect, is boiled in an atmosphere of very-hot gases (2,000 F). Because the coal is not moved long distances in the gas stream and because the quantity of heat carried out in the gas stream is reduced, Battelle engineers state that the efficiency in drying fine coal containing 15 to 25% moisture has reached 75 to 85%, compared with a maximum of 55% for equipment hitherto available. "It is expected that 90% efficiency can readily be obtained with some coals in production plants."

HERE'S HOW THE SLUDGE POND is mined. It's the first step in . . .

Recovering Sludge at Harco

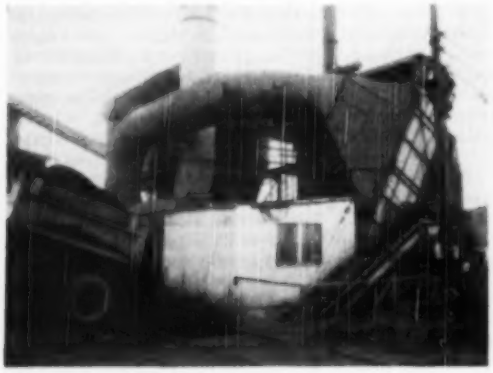
Mining Money From a Sludge Pond Requires . . .

A Plant, Which Doesn't Cost Much
Some Loading and Hauling Equipment
A Small Operating Crew
A Market for Very Small Sizes

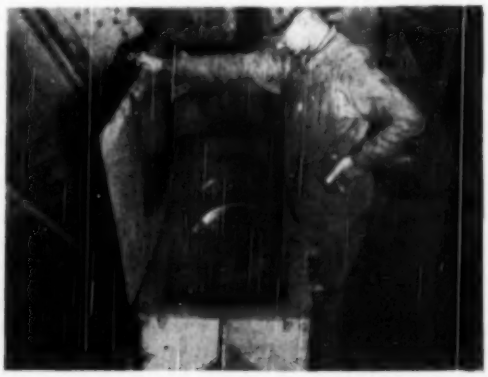
BELIEVE IT OR NOT, money may be buried in your sludge pond. Getting it out requires little more than some investment in plant, though not a big outlay, and some smart, sales-wise development of a market for very fine sizes of coal.

That's what Peabody Coal Co. has done at Harco No. 47 mine, near Harrisburg, Ill. There, a special sludge recovery-operation is "mining" close to 250 tons per shift of marketable 28-m x 0 coal suitable for burning in pulverized-fuel plants and thus is turning the sludge ponds, once a liability, into an asset. Already, from one 10-yr-old pond the company has recovered, dried and sold over 1,200 railroad cars of fuel and "mining" now is under way in a second pond that will be equally valuable. The product delivered by the operation runs about 13.5% in ash and 9% moisture, against some 19.5% moisture in the feed to the drying plant.

● **Here are the major items** of equipment needed to make sludge recovery a profitable operation: a drying plant with hot-air supply, a pit-loading unit, enough haulage



SLUDGE IS ELEVATED from hopper by drag conveyor to screw conveyor, which feeds it into drying unit.



ON DISCHARGE SIDE, dried sludge is screw-conveyed under cover to an enclosed drag conveyor.

THIS PLANT turns sludge pond solids into dollars. Old pond is seen in background.

trucks to keep the dryer busy and an oil-storage tank with heater and spray. For odd jobs required from time to time, such as leveling roadways and building up sludge-pond levees, the 'dozer tractor found around almost any mine will do yeoman service.

At Harco No. 47, the central unit is a Link-Belt Multi-Louvre dryer with a Furnace Economy Co. furnace and Firite stoker, Clarage fans with Allis-Chalmers motors and a battery of four No. 19 Link-Belt L. S. dust collectors, two end-dump 5-ton Mack trucks, and a gasoline-powered clamshell, built by Unit Crane & Shovel Works, with a $\frac{3}{4}$-yd bucket.

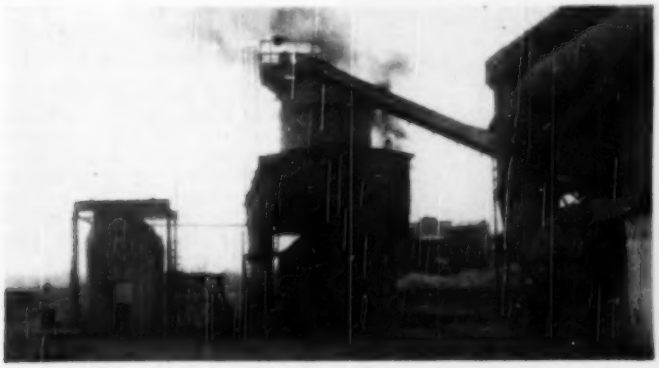
At the preparation plant, sludge is withdrawn from an Allen & Garcia cone and is forced by an Allis-Chalmers "non-clog" centrifugal pump with open-type impellers through about 1,000 ft of 4-in steel pipe to the sludge pond, the discharge of the pipe being some 30 ft above the level of the cone bottom. Every odd joint in the pipe is equipped with a "T" and a plug for easy access if the pipe clogs. For about half the distance from cone to pond, the pipe slopes downward; for the second half, upward. This arrangement makes it easy to drain the pipe in freezing weather. Erosion by the slurry makes it necessary to renew the pipe about once a year and to repair the pump about every three months.

● **The sludge pond is built up gradually** over a period of years by continually building one levee on top of another, according to a pattern developed by Charles Boyett, slurry-plant superintendent. To start the pond he first laid down an 8- to 10-ft levee of clay on three sides of a 1,000-ft square area. The levee on the fourth side of the square—the south side—was built of gob. The discharge end of the slurry pipe was mounted at the northwest corner of the square and the slurry then was pumped in. Water draining down through the slurry could not pass through the clay levees, but did seep through the gob levee, and finally into a make-up water reservoir. From there the water was recirculated to the preparation plant.

When the slurry neared the top of the original four-sided levee, another levee was built on top. The new levee was made of gob on all four sides. Slurry continued to enter the sludge pond, but the water seeping down through the slurry still could not escape through the bottom clay levee on three sides. It did filter through the original gob levee, however, and continued, as before, to flow into the reservoir. Thus adding one levee on top of another, Peabody has been able to build the sludge pond up to almost any desired depth. The pond now being mined is some 50 ft deep, a convenient depth for working.

How the Pond Is Mined

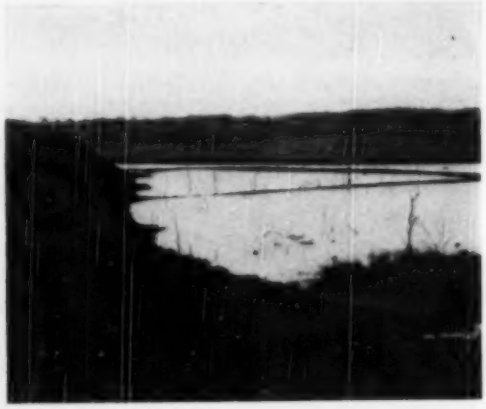
● **In planning the sludge recovery,** Mr. Boyett and other Peabody officials figured this way: the high-ash slurry would settle out nearest the discharge end of the sludge pipe and ash content would fall in proportion to the distance from the discharge. Thus ash content of the coal in any area of the sludge pond could be predicted with reasonable accuracy. They also figured that the slurry farthest from the discharge would be the very smallest



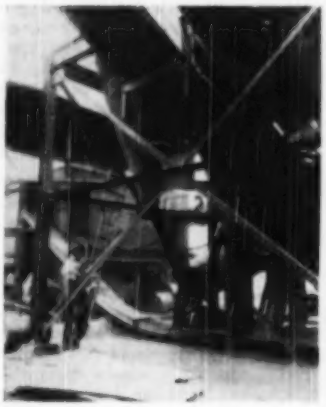
STILL ENCLOSED, dried sludge is elevated to storage hopper above railroad track. Structure at left, topped by oil tank, houses oil-heating and pressurizing equipment (right). Loaded cars are sprayed to seal against moisture and to prevent blowing away.

Sludge Recovery at Harco No. 47 Mine Is a Profitable Operation

SLUDGE POND, built to depth of over 50 ft by successive levees, is filled by pipe from preparation plant.



GOB LEVEE on one side of rectangular pond permits water to filter through to preparation-plant reservoir.



FOUR DUST COLLECTORS (left), cone-shaped, clean exhaust air. Dust is conveyed to furnace bin and used for plant fuel. Automatic controls with recording instruments provide maximum safety and efficiency for the drying plant.

SLUDGE-PLANT CREW—Robert Patterson (left), helper; Arthur Thompson, operator; and Charles Boyett, superintendent.

size, that it would form into small agglomerate balls and that, for this reason, it could not be dried easily or without added cost.

They were right on all counts. That's why the sludge pond is "mined" no closer than 100 ft or so to the discharge point and no closer than 200 ft or so to the southeast or farthest corner of the pond. "Mining" thus is confined to the center area of the pond, where ash content and moisture are manageable.

As stated earlier, there are two sludge ponds at No. 47. Some 1,200 carloads have been "mined" from the older pond and work now is going on in the second pond, while the first pond is being refilled with slurry. But if the pipeline now carrying sludge to the first pond should break or clog, sludge still can be pumped into the second pond without interrupting the "mining," for on top of the sludge in the second pond Mr. Boyett has built an emergency levee around the "highwall" that will keep any emergency slurry from flowing into the working area.

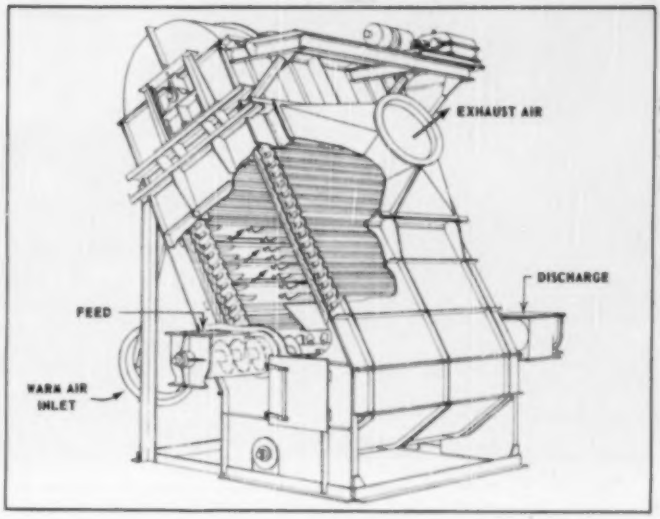
Loading in the sludge "pit" goes on 24 hr a day. The Unit clamshell digs into the "highwall" and drops its load into trucks. A D-4 Caterpillar enters the "pit" from time to time to smooth out the haulage roads. Distance from the "pit" to the drying plant is no more than 500 yd at present.

● **At the drying plant,** trucks back up and dump the sludge into a bin. From the bin it is elevated on a 30x4-in drag conveyor, driven by an Allis-Chalmers 5-hp motor at speeds from 15 to 45 fpm. Capacity

of the conveyor at 28 fpm is 35 tph. The drag conveyor discharges at right angles into an enclosed 18-in screw conveyor which feeds the dryer.

How the Dryer Works

Hot air for drying the sludge is provided by a Furnace Economy Co. furnace. The furnace walls are 19 in thick and are built of an outside wall of common brick and an inside wall of firebrick with a 6-in air space between. The furnace has twin grates and a Firite stoker made by Hoffman Combustion Engineering Co. The stoker and grates are especially made for pulverized fuel, more than enough dried sludge to operate the furnace being fed into a fuel-storage bin from the dust collectors, through which the spent drying air passes before being vented through the exhaust stack. Ash is removed from the furnace by hand. A Clarage blower provides air for the furnace.



PERSPECTIVE DRAWING shows dryer housing, louvre flights, air flow and conveyor system.

● **The drying unit itself**, as stated earlier, is a Link-Belt No. 1224 Multi-Louvre dryer. Assembled and completely enclosed, it stands some 30 ft high, not counting the stack. It can receive 79,600 lb per hour of 28mx0 sludge containing 20% original moisture and turn out 70,000 lb per hr of dried product with 9% moisture (wet basis).

The drying process works like this: Hot gases from the furnace at 850 to 1,000 deg F are drawn through the dryer at 63,300 cfm by a Clarage No. 57 exhaust fan, 447 rpm, 10 ft in diameter, driven by a 125-hp Allis-Chalmers motor. The quantity of hot gases passing through the dryer is controlled by a manually operated damper in the exhaust stack.

The screw feeder dumps raw sludge at a theoretical temperature of 40 deg F onto a series of 127 steel louvres, each 10 ft 11 in long, mounted horizontally on twin endless chains at 6-in intervals. Pulled by the chains, which rotate around sprockets, the louvres describe a path that is about 30 deg off the vertical. The coal is carried upward by the louvres on the under side of the parabolic path. They act as trays as long as they move upward, but when they approach the apex of the circuit and start around the upper sprocket, they tilt and thus spill the coal out. The coal falls onto the louvres rising behind, laden with more raw sludge and spillage. Thus a continuous cascading effect is produced, giving the hot gases plenty of time to sweep the coal and dry it. The speed of the louvres is such that about 180 louvres pass a given point every minute—some 90 fpm.

● **As fast as raw sludge is fed** into the plant, dried coal sifts through the cascade to the bottom of the dryer, below the level of the lower sprocket. The dried product is deflected by a baffle plate into a collecting trough and is carried out of the drying unit by an enclosed screw conveyor. The screw conveyor discharges the coal at a temperature of 120 deg F onto an enclosed 30x4-in drag conveyor. The low discharge temperature is achieved by admission of cooling air from the outside through horizontal vents in the side of the dryer housing.

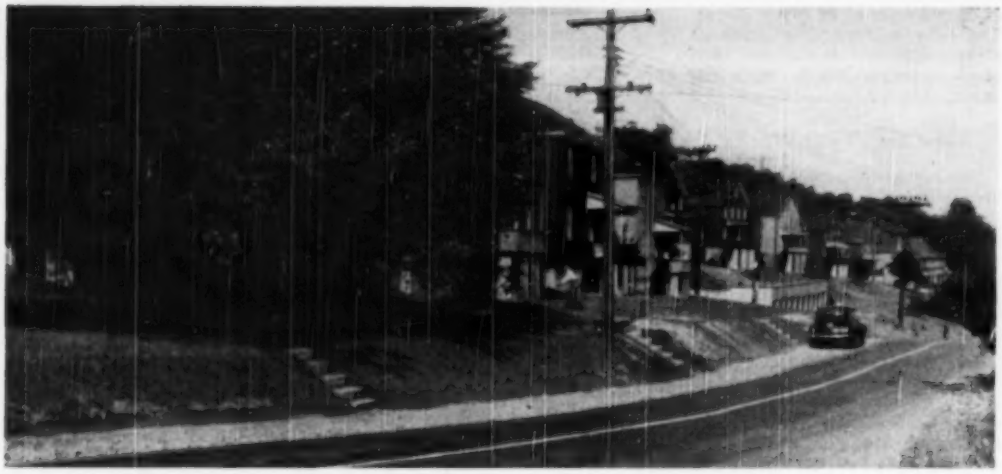
The coal is discharged again at right angles onto another enclosed 30x4-in drag conveyor, which elevates it to the top of the loading station. There it is dumped into a 12-ton storage bin and is loaded through twin gates into railroad cars on the track below.

The low discharge temperature of the coal—120 deg F—is insurance against spontaneous firing of the coal after it is loaded for shipment. Each loaded car is sprayed with about 18 gal of heavy-base oil at a temperature between 120 and 150 deg F. This seals out water and keeps the coal from blowing away in transit. For oil spraying, a Viking oil pump, a 2-hp Century "Polyphase" motor, an oil-heating tank and a 5,700-gal oil storage tank are housed adjacent to the loading station.

In passing through the dryer and mixing with the coal, the hot gases naturally pick up dirt. This dirt is removed in a battery of four No. 19 Link-Belt L.S. dust collectors made of 10-gage steel. Dust from the collectors, running about 21.5% ash, is fed through rotary gates onto a small enclosed conveyor and is discharged into a storage bin at the furnace, where it is used as plant fuel.

● **With high-temperature gases** and fine coal dust inside the dryer, any stoppage of the big exhaust fan would be dangerous. That's why the air system is set up so that if the exhaust fan does stop, an exhaust damper automatically closes the stack, shuts a protection damper at the hot-air inlet and opens a small by-pass damper, thus exhausting the hot gases through an auxiliary stack before they reach the dryer.

The control panel, housed in a small building near the exhaust fan, is equipped with pushbuttons which excite Cutler-Hammer Unitrol switches. The panels have Brown Electronik "Continuous Balance" potentiometers, as well as recording indicators for gas-inlet and coal-product temperatures. All these are calculated to simplify plant operation and keep manpower needs low.



TRIM AND TIDY HOMES in pleasant surroundings reward Johnstown Coal & Coke Co. and employees after a year of hard work.

Johnstown Coal & Coke Employees and Officials Happy As . . .

Mining Town Gets New Look

Another Rehabilitated Mining Village Shows That Interest, Effort and Civic Pride Can Dispel Popular Notions of What a Mining Town Looks Like—Miller Shaft Village Is Pretty, Pleasant and Proud

By HAROLD DAVIS, Assistant Editor, Coal Age

MILLER SHAFT VILLAGE, at Portage No. 4 mine, Johnstown Coal & Coke Co., Portage, Pa., is a pleasant place to live since the company and residents completed their community-improvement project in the fall of 1949. The village is "home" to 38 contented families of present or retired employees and presents a picture of well-kept homes, carefully maintained surroundings and cooperative village housekeeping.

The project began late in 1948 and included community and mine property improvements. W. D. Hughes, in charge of real estate for the company, states that the improvements were planned by Andrew B. Crichton, Sr., president, for the express purpose of "providing desirable and comfortable living conditions for employees, and to improve operating efficiency." These aims have been accomplished.

The company planned the dress-up for the purpose of . . .

"Providing desirable and comfortable living conditions for employees, and improving operating efficiency."

Young people say . . .

"We're proud to bring visitors to our town because we know they will be pleasantly surprised."

Everybody agrees . . .

"If we are going to live and work here we intend to make our surroundings as pleasant as we can."

Miller Shaft homes were originally built 30 to 40 yr ago and, of course, 1910 plumbing was installed —in the back yard. Basements were a luxury in those days, so the homes were supported on wooden columns. Also, the village is situated in an area where bedrock formed unsightly ledges and projections in outcrops near the homes. Normal mining wastes were in evidence in slate banks and in cinder accumulations on roads, paths, homes and gardens.

• **To provide the "new look,"** homes were covered with Insulbric siding in buff and red. Where possible, basements were dug and concrete floors and foundations poured, while masonry walls were substituted for the wooden columns in all other instances. Lattice panels under porches brighten up the street view of the houses, and bright paints trim the wooden finish around windows, doors and gables.

Home interiors were not neglected. By adding two partitions upstairs, it was possible to provide another bedroom and bathroom. Previously two large bedrooms and a large hall took up all second-floor space. Under the new arrangement one of the old bedrooms has been reduced in size somewhat, but an additional small

MINE IMPROVEMENTS kept pace, as the new supply house (left) and hoist house (right) indicate.

bedroom and, above all, a bathroom, have been gained. Tile, inlaid linoleum, modern fixtures and good housewifery show up this latter improvement to advantage.

● **Modern kitchen fixtures** have been added, including new sinks and cabinets, and hot-water systems have been installed to serve bath and kitchen. Complete redecorating throughout the homes, in addition to the improvements mentioned, has made these dwellings the envy of numerous employees living in other towns. Therefore, there is a waiting list.

Mr. Hughes, who assumed charge of all this work, invited your editor to visit some of the homes and meet some of the residents. The consensus among our hosts was that Miller Shaft village is a good place to live and the community program has their unqualified approval.

● **Providing a suitable setting** for these "new" homes was the next undertaking. The projecting rock ledges and boulders were removed so that the property could be terraced and roads could be widened, rerouted and graded. Lawns were planted and shrubbery and trees were placed about the homes.

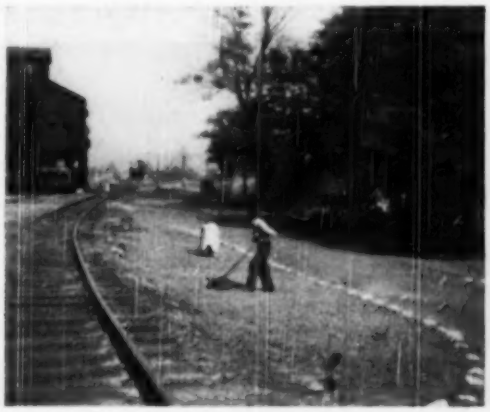
During the landscaping and grading operation, a sewer system was laid to serve the home improvements.

Roads and parking aprons are now surfaced with macadam and lined with whitewashed rock on each side. New garage facilities and street lighting were other innovations receiving quick approval of Miller Shaft residents.

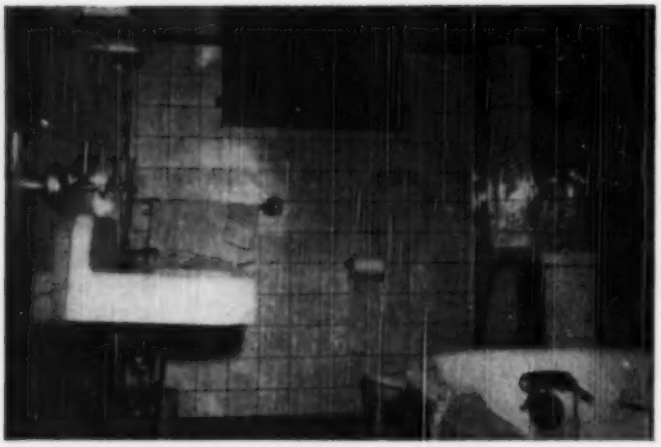
It is apparent from the preceding recital of improvements that a considerable financial outlay was necessary, but officials of the company feel that higher employee morale and increased value of the site are worth the expense. Most of the work in the homes and the landscaping was done on contracts let to outside firms.

● **A playground for the children** of the community, it is hoped, will be completed this summer. The company is donating a playground site and the men of the town will arrange and equip this area—and then the village will have another asset. In fact, conversations with

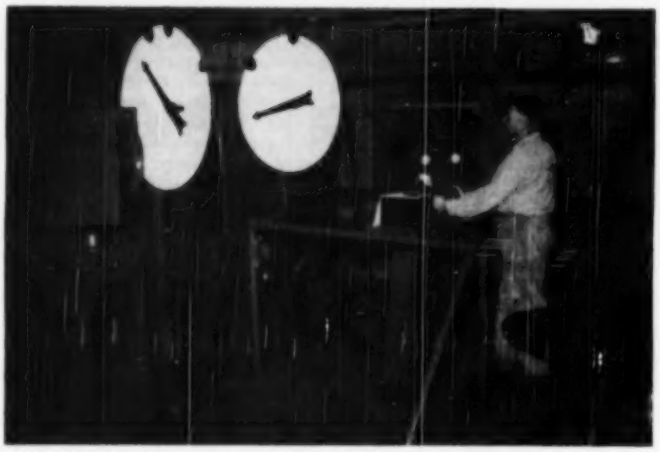
REDECORATED INTERIORS get the approval of Mr. & Mrs. Joseph Hornyak, who enjoy living in Miller Shaft village.



LAWN MAINTENANCE and property care provide real pleasure to retired employee John Toth and Mrs. Toth.



MODERN BATHROOMS in all homes are highly appreciated. Efficient use of existing space made these possible, and new hot-water systems complete the facilities.



RUNNING THE NEW ENGINE in the modern hoist house is a pleasure for Frank McClain, hoisting engineer. His engine and engine room are spotless.

OFFICE STAFF MEMBERS, C. A. Rinehart (left), Mrs. Hardy, Mrs. Hodgson, Miss Hornyak and Mrs. Hochrein like the results of the town-and-mine improvement program.

young people of the town brought out another observation. "Now," they say, "we're proud to bring any visitor to our town because we know they'll be pleasantly surprised. It didn't always look like this." This feeling among the young people is a tribute the company appreciates.

A community Christmas tree and appropriate outdoor lighting are an indication of year-around pride exhibited by the townspeople. In summer months, flower boxes are in order around the supply house and office and most of the residents cultivate gardens and flower beds, so there is no lack of color. "If we are going to live and work here we intend to make our surroundings as pleasant as we can," seems to be the thought in everyone's mind.

• **All this improvement** has brought incidental benefits. The company has instituted door-to-door garbage collection by dispatching a company truck to the village at regular intervals. Delivery service from outside firms has improved as a result of the new roads, and this means a lot to the families in Miller Shaft village. Dust in dry spells and mud in rainy weather made housekeeping difficult, but lawns and paved roads and walks almost eliminate these problems now.

To increase operating efficiency at the mine, a new electric hoist, hoist house, automatic manshaft elevator and supply house were constructed. The new buildings are buff brick and are designed to take full advantage of natural lighting and ventilation. Older mine buildings received a fresh coat of paint, and the office has a lawn to match those around the homes.

• **Outside employees and the office staff** are happy to work in these pleasant surroundings and take an active part in maintaining the "new look." Supply yards are kept in order and the entire property gives evidence of good housekeeping.

But the emphasis is on the home and village improvements and the civic pride that has risen as a result of these improvements. Your editor left Miller Shaft with the feeling that the day of the mining town is not past when company and residents cooperate to secure the advantages of comfortable homes in pleasant surroundings. So—a tip of our hat to Miller Shaft citizens and Johnstown Coal & Coke.

95 TIME STUDIES indicate superiority from performance and cost standpoints of . . .

Battery Power for Shuttle Cars

By M. W. HEINRITZ
Vice President, Gould Storage Battery Corp., Trenton, N. J.

COAL-MINING PROGRESS in the past 10 yr has been marked by a record-breaking increase in the use of mechanical-mining equipment. In 1940, for example, only 32% of the annual bituminous output was mechanically loaded underground. In 1949, the figure was 52%. In 1938, only five shuttle cars were in use. In 1948, there were 2,900.

This movement, of course, reflects constantly mounting production costs, making it vital for mine management to find cheaper ways of bringing coal to the surface. Mechanizing underground operations is the answer.

Savings achieved by the early installations of mechanical-mining equipment—loaders, cutters, shuttle cars, and so on—clearly justified its purchase. Lately, however, management is being forced to do more than merely install machines. It is now necessary to analyze closely the operation of mechanical equipment to obtain the maximum savings. The right equipment must be selected for the job and the different pieces of equipment must be integrated to operate as a unit. Only in this way can the ultimate benefits of mechanization be achieved.

• **Time-Study Results**—Pioneering in methods-analysis of mine operations, the School of Mineral Industries at Pennsylvania State College, over the course of the last

Table I—Theoretical Working Time for a Continuous Mining Machine Mining 2 TPM—Data From Tables VI and VII

Round-Trip Distance, Feet	Battery				Cable				Per Cent Working-Time Diff.
	No. Trips	Loading Time per Trip	Machine Loading Time, Minutes per Shift	Tons per Shift	No. Trips	Loading Time per Trip	Machine Loading Time, Minutes per Shift	Tons per Shift	
400	77	2.12	163.24	327.25	66	2.25	148.50	297	+10.0
500	71	2.12	150.52	301.75	61	2.25	137.25	274.50	+ 9.7
600	66	2.12	139.92	280.50	57	2.25	128.25	256.50	+ 9.15
700	63	2.12	133.56	267.75	54	2.25	121.50	243	+10.0
800	59	2.12	125.08	250.75	50	2.25	112.50	225	+11.2

How Battery-Powered Shuttle Cars Perform on the Job

Table II—Performance—Ton-Miles per Shuttle-Car Hour

	No. Time Studies	No. Shuttle Cars Studied		Average TM/SCH	
		Battery	Cable	Battery	Cable
Low coal	37	23	14	4.53	2.51
Medium coal	26	17	9	5.40	3.39
High coal	32	15	17	7.78	7.79
Total	95	55	40	...	...

Table III—Travel Speed Loaded—FPM

	Battery	Cable	% Difference
Low coal	284	226	25.6
Medium coal	313	212	47.6
High coal	325	298	9.1
Average fpm.	307	244	...

Table IV—Discharge Rate—Minutes per Ton

	Battery	Cable	% Difference
Low coal	0.31	0.62	50.0
Medium coal	0.25	0.32	28.0
High coal	0.16	0.23	43.7
Average	0.24	0.39	...

Table V—Tons per Man-Shift

Mine No.	Section	Shuttle-Car Equipment	Average TMS*
100	103	1 cable	21.6
	102	2 battery	24.9
	101	2 battery	29.5
230	231	2 cable	16.8
	232	2 cable	11.0
	233	2 battery	13.0
	234	1 battery, 1 cable	15.2
720	722	2 cable	17.1
	721	2 battery, 1 cable	16.8
300	302	2 cable	17.2
	301	2 battery	18.8

*Average productivity for the 50 shifts prior to the date of the time study.

Table VI—Battery Car—Single-Car Section

	Round-Trip Distance, Feet				
	400	500	600	700	800
Loading time, min	2.12	2.12	2.12	2.12	2.12
Travel loaded time, min	0.66	0.83	1.00	1.16	1.33
Discharge time, min	1.06	1.06	1.06	1.06	1.06
Travel empty time, min	0.66	0.83	1.00	1.16	1.33
Cycle time, min	4.50	4.84	5.18	5.50	5.84
No. trips (346.8 min production time)	77	71	66	63	59
Tons per shift (4.25 tons per trip)	327.2	301.7	280.5	267.7	250.7
Tons per year (500 shifts)	163,600	150,850	140,250	133,850	125,350
Tons per 5 yr	818,000	754,250	701,250	669,250	626,750

Table VII—Cable Car—Single-Car Section

	Round-Trip Distance, Feet				
	400	500	600	700	800
Loading time, min	2.25	2.25	2.25	2.25	2.25
Travel loaded time, min	0.80	1.00	1.20	1.40	1.50
Discharge time, min	1.36	1.36	1.36	1.36	1.36
Travel empty time, min	0.80	1.00	1.20	1.40	1.60
Cycle time, min	5.21	5.61	6.01	6.41	6.81
No. trips (346.8 min production time)	66	61	57	54	50
Tons per shift (4.50 tons per trip)	297.0	274.5	256.5	243.0	225.0
Tons per year (500 shifts)	148,500	137,250	128,250	121,500	112,500
Tons per 5 yr	742,500	686,250	641,250	607,500	562,500

2 yr, has conducted some 95 time studies to investigate coal-mining operations step-by-step. The techniques were detailed in the March, 1949, issue of *Coal Age*. To evaluate the results, an analysis has been made of the data gathered on shuttle-car operations. This analysis compares the operation of battery-powered with cable-reel shuttle cars.

Before presenting the facts disclosed by the studies, however, certain features of battery power perhaps should be briefed. Battery-powered cars, of course, have no cable to limit their range of operation and are free to travel as much as 1,000 ft from the loader to the discharge station. They can easily run around blocked passages and can be directed so that cars moving in opposite directions need not use the same heading. This flexibility also permits battery cars to gob underground and handle supplies easier than the cable car.

Then, too, the battery-operated car is not affected by power failures and of course does not draw current to drain the supply to other machinery. And new-type batteries make it possible for one set to supply a shuttle car two shifts before recharging is required.

● **Battery Advantages**—The specific battery advantages indicated by the 95 time studies are summarized in the following material:

Table II indicates that battery cars provide up to 80% more ton-miles per shuttle-car hour.

Table III indicates that battery cars travel up to 48% faster, largely because of their greater flexibility and self-contained power.

Table IV indicates that battery cars unload up to 50% faster.

Where both types of shuttle cars are operating under the same conditions—particularly travel distance—battery-powered cars produce more tons per man-shift. Four of the mines studied used both battery and cable-reel cars under virtually similar conditions. Average tons per man-shift for these mines, based on the 50 shifts prior to the study, is given in Table V.

Battery cars are better adapted to moving coal in the quantities required to justify the large investment in mechanical equipment because of their flexibility, higher traveling speeds and higher unloading rates. The data in Table I indicate that under identical operating conditions, the battery-powered shuttle car enables a continuous mining machine to work

approximately 10% more shift time.

● **Section Comparison**—Tables VI and VII show comparative figures for a single-car section for both battery and cable-reel cars. The following averages are used:

Loading Time With 2-TPM Loading Machine

Battery car (42D), 4.25 tons, 2.12 min.
Cable car (42E), 4.50 tons, 2.25 min.

2. Travel Speeds (Table III)

Battery car, 300 fpm.
Cable car, 250 fpm.

3. Discharge Time (Table IV)

Battery car, 0.25 min per ton.
Cable car, 0.36 min per ton.

4. Production Time

	Minutes
Total shift time	400.0
Av. place changes (8.5%)	34.0
Av. maneuver time (4.8%)	19.2
Production time	346.8

5. Total Shifts

Days worked per year	250
Shifts per day	2
Total shifts per year	500

Two cost comparisons in "A Report of Mine Shuttle-Car Operation based on 95 Time Studies" (available from the Gould Storage Battery Corp., Trenton, N. J.), indicate the dollar advantages of battery power. One, from T. P. No. 2198, Class F, *Coal Technology*, May, 1947, pp 26-28 (American Institute of Mining and Metallurgical Engineers), is shown in Table VIII.

The second comparison (1949) was supplied by a manufacturer of mining equipment and is summarized in Table IX.

Additional recent data, from a captive mine, are outlined in the following excerpt from a report on shuttle-car operation:

"The .... Coal Mining Co. has completed its time study of battery v. cable-reel cars at ...., Pa. This involved 13 battery cars and 7 cable-reel cars.

"So far, the records have shown that the company purchased for these 13 cars $9,000 worth of batteries over a 10-yr period. They have purchased for the seven cable-reel cars, in active use only 3 mo, $4,095 worth of cable to replace damaged cable—two cables per car. The study so far shows a slight advantage for battery cars in coal production, namely, 3 tons per man-shift over cable cars. This company definitely will keep its battery cars and use cable cars where the grades exceed 4%."

The results of these studies appear to indicate that storage-battery cars are more generally desirable than cable cars. However, to select the most suitable equipment for a given mine, time and methods studies of the type made by industrial engineers in manufacturing plants should be employed. Such methods will permit integrating all the units in a mine or section so that all equipment will be kept operating a maximum number of hours each shift. Furthermore, these studies will provide data from which the correct type, size, capacity and other characteristics of each piece of equipment for a given job can be selected.

Table VIII—Summary of Section Costs, Battery- and Cable-Car Production Units

	Cable-Reel Cost		Battery Cost	
	Per Ton	Per Cent	Per Ton	Per Cent
First cost; equipment only, 5-yr write-off	$0.080	6.69	$0.076	6.38
Cost of allied equipment (batteries, chargers, cable)	0.013	1.09	0.013	1.09
Maintenance, all section equipment	0.185	15.47	0.190	15.94
Power cost	0.041	3.43	0.036	3.02
Labor, including section foreman	0.627	52.42	0.627	52.60
Supplies	0.200	16.72	0.200	16.78
Amortization, and/or fees, royalties, taxes	0.050	4.18	0.050	4.19
Totals	$1.196	100.00	$1.192	100.00

TABLE IX—Cost Comparison, Battery and Cable-Car Operation, Two-Shift Schedule, 5-Yr Amortization, 4-Yr Battery Life

(Equipment common to both systems: 5-tpm loading machine, elevating conveyor, locomotive, cutter and post-mounted drill.)

SINGLE CABLE-CAR SYSTEM		SINGLE BATTERY-CAR SYSTEM	
1 Shuttle car	$10,790	1 Shuttle car	$ 8,060
20 Replacement cables	6,000	¼ Battery charger	1,174
		2½ Sets batteries	6,750
Total	$16,790	¼ Central-station cost	175
		30 Changer move-ups	420
		Total	$16,579

TWO CABLE-CAR SYSTEM		TWO BATTERY-CAR SYSTEM	
2 Shuttle cars	$21,580	2 Shuttle cars	$16,120
40 Replacement cables	12,000	½ Battery charger	2,348
		1 Battery changer	500
Total	$33,580	5 Sets batteries	13,500
		½ Central-station cost	350
		45 Changer move-ups	630
		Total	$33,448

Assumptions used in making the foregoing estimate are:

1. The central battery-charging station remains fixed during the 5 yr.
2. Changer move-ups are made every 60 days in the one-car section and every 45 days in the two-car section.
3. Available mine equipment is used to transport the batteries to the changing stations and to haul old and new cable for vulcanization and replacement.
4. Replacement cable is listed as a capital expenditure. Most mines consider this an operating expense. However, replacement cable is a mining expense and must be included in any final cost-per-ton figures.
5. Cables are replaced every 3 mos. This is average. Some last longer, many shorter.

CASTING OVERBURDEN on the bank is made easy by high-lift combination of boom and stick. Machine can be shipped easily with minimum of knockdown, occupying only three flatcars.

New Shovel Design Speeds . . .

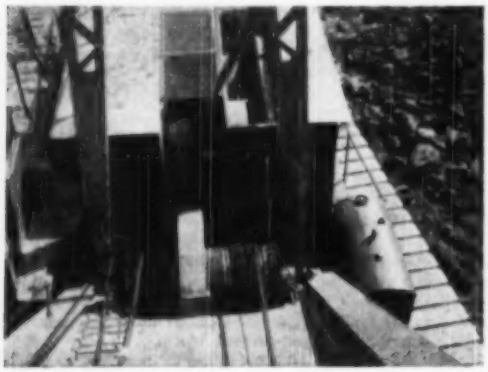
Stripping Without Shooting

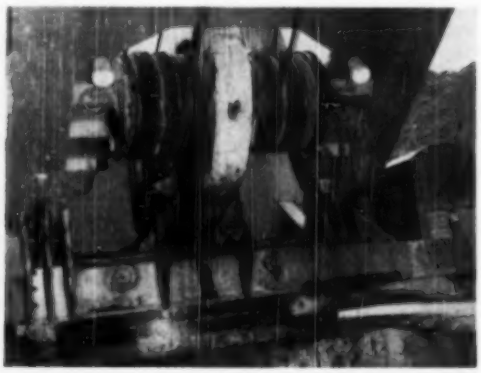
Tough Cover No Bar to New Medium-Weight Shovel—Compact, Flexible Unit Digs Clay, Sandstone and Shale Overburden Without Help From Shooting—Coal Trucked 4 Mi to Railroad for Handpicking and Shipping

A NEWLY DESIGNED high-lift, medium-weight, heavy-duty shovel is stripping up to 50 ft of clay and hard sandstone and shale without shooting at the 500-tpd strip mine of Superior Coal Strippers, Inc., some 12 mi south of Terre Haute.

Superior mines the No. 7 seam, which ranges from 3 to 6 ft in thickness and rolls considerably. The coal has a low sulfur content and averages about 8% ash. For shipment, it is handpicked and crushed to minus 4 in at a loading ramp, about 4 mi from the pit.

• **In a typical 25-ft cut,** where the stripping shovel now is working, the machine handles about 10 ft of clay and 15 ft of sandstone and shale. As the overburden deepens, the proportion of hard material to clay remains about the same. This is much like the overburden encountered in an older pit west of Terre Haute, where Superior formerly operated. There, nearby farmers and





SHOVEL STRUCTURE features crowd-and-retract drum (left), driven by rear drum that also operates hoist. Forward drum is mounted on boom-hinge center line (right), thus preventing boom angle from affecting ropes.

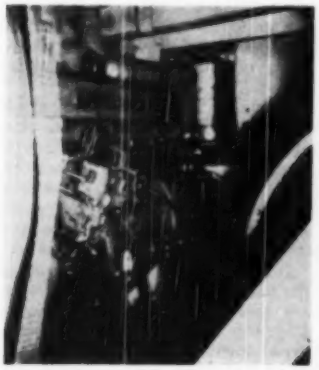
DIPPER-TOOTH MARKS behind Mr. Moore were cut in sandstone and shale.

DIGGING INTO HIGHWALL, the shovel takes a 4- to 5-yd bite of clay, sandstone and shale that has not been shot. Tough overburden is no obstacle.

other residents complained that blasting tremors damaged their buildings and homes. These complaints led the company to seek a way of handling the tough cover without shooting it.

Meanwhile, the Manitowoc Engineering Works was looking for a proving ground for the prototype of a new-model shovel and dragline. They wanted to put the shovel through field tests, rather than the dragline, in the belief that possible design and structural weaknesses would show up earlier in the shovel.

The upshot was that Superior and Manitowoc got together and the new shovel got its tests at Superior's strip mine under the joint supervision of Charles H. Moore, the company's secretary-treasurer and superintendent, and E. B. Nickles, chief engineer for Manitowoc. Likewise, the mine operators found a machine that would strip the tough overburden without shooting.



SHOVEL POWER UNIT is a 550-hp diesel. Tough stripping demands lots of power.

Having proved itself in the old pit west of Terre Haute, the shovel, with some modifications, now is doing the same efficient job in the new pit, where operations started up in April. The 20-month trial period has put the machine through exacting tests and has given its builders an opportunity to find and eliminate the "bugs."

● **The new-type shovel** is a Manitowoc 4500, driven by an NVHS 1200 Cummins diesel engine, with a maximum rating of 550 hp and a maximum speed of 2,100 rpm. The shovel boom is 60 ft long; the tubular stick, 50 ft long. The dipper was designed and built by Manitowoc to handle 4 yd of material but it lifts up to 5 yd of overburden when working in clay.

Manitowoc's idea in building the machine was to find a design that would do heavy work and yet could be shipped compactly with a minimum of dismantling. The result is a machine which, when disassembled, strips down to 11 ft 1 in in width and can be loaded onto three flat cars. Furthermore, the machine can practically load and unload itself.

The basic machine is shipped intact on one car, the rotating base not being removed from the crawler base. The parts removed for shipment include boom stick and dipper, crawler track assemblies, operator's cab, light plant, auxiliary fuel tank, radiator and catwalks. If low clearances are expected en route, the mast and mast rigging are removed.

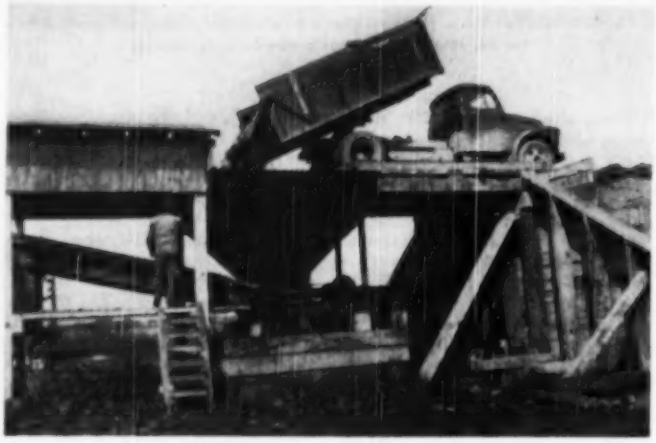
● **The flexible H-frame boom,** though not unique, is unusual in that this probably is the smallest shovel it has been applied to. The side plates provide great strength with flexibility and the nearly continuous center web permits the boom to twist freely, thus flexing with the direction of forces that oppose the dipper and stick.

The original round dipper stick, made of $\frac{5}{8}$-in Man-ten steel tubing, has since been replaced with $\frac{7}{8}$-in-thick steel of the same alloy. Also, the stick has been reinforced in the areas of greatest stress with diaphragm plates of steel. The stick is free to rotate in its rollers.

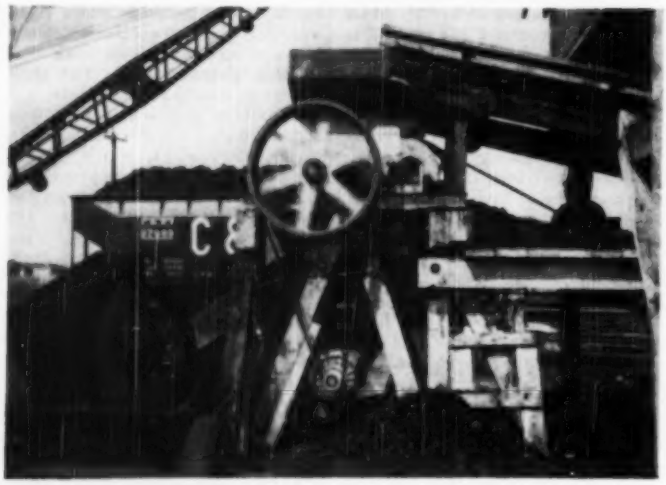
The diesel engine in the 4500 is connected by a roller chain drive to the primary shaft, which carries the swing clutches. From this shaft, a train of spur gears drives the two main drums. These drums are arranged in tandem and are driven at unequal speeds, the rear drum being the slower. All gears and chains, except roller-path gear and final crawler drive, are completely enclosed and run in oil.

● **In the dragline,** the rear drum carries the drag rope but in the shovel this drum is fitted with a sprocket lagging and an extra reversing clutch and is used to drive the crowd-and-retract drum, which is mounted on the base of the boom.

COAL IS LOADED by small shovel . . .



DUMPED into hopper, handpicked . . .



CRUSHED to size and elevated into rail cars.

This drive consists of two roller chains with sprockets on the boom-hinge center line, making it independent of boom angle. The use of the additional drum on the boom eliminates all bends in the crowd and retract ropes, except at the shipper shaft, and permits the drum to be of larger diameter and to operate at slow speed. Experience to date indicates long life for crowd and retract ropes, company officials report. They point out, as a further operating economy, that these ropes, being of the same diameter and construction as the hoist rope, can be cut from discarded hoist ropes.

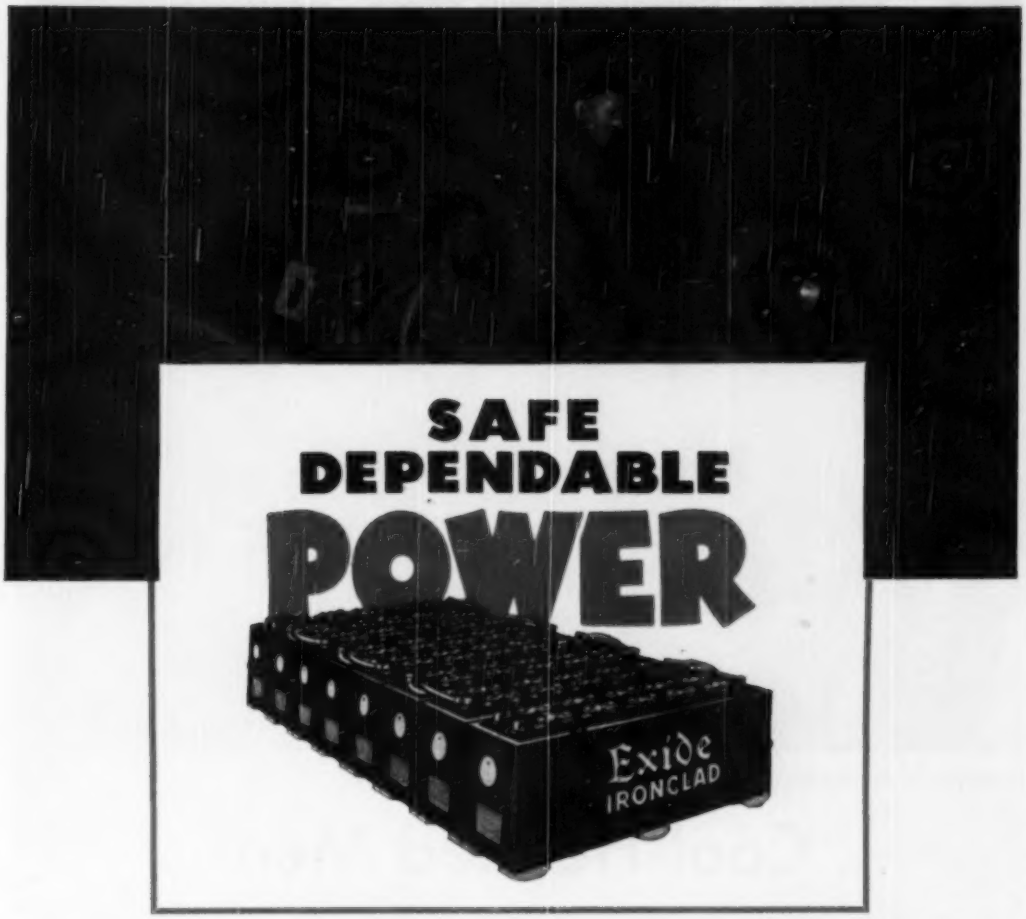
The loading shovel at Superior is a Manitowoc 2000, driven by a Caterpillar D-13000 engine and equipped with a 1¼-yd dipper. When operating at capacity of 500 tpd, it keeps seven 8-ton trucks busy.

● **The trucks make the 4-mi run** to the railroad siding, back up the ramp and dump their coal into a steel hopper. The coal is fed from the hopper through a reciprocating feeder and onto a 20-ft rubber belt. There one man handpicks the slate and rock. Feeder and picking belt are driven by a single 5-hp motor with an American speed reducer. The coal is discharged into a Scottdale Machine, Foundry & Construction Co. adjustable double-roll crusher, each roll being driven by its own 10-hp Louis Allis motor. The crushed coal is discharged at right angles onto a rubber elevator belt mounted on wheels and thus is loaded into railroad cars on the siding.

Pending installation of a power line to the ramp, power at the loading station is provided by a war-surplus Onan electric plant, 60-cycle, 220 v ac; 125 v dc. Square-D starter buttons and A-B switches are mounted on a panel within reach of the man who handpicks the coal.

Except in very wet weather, pit drainage is no problem, water running off by gravity through trenches in the highwall. However, for emergency, four Marlowe 3-in pumps equipped with Wisconsin air-cooled gasoline engines are kept on hand as standbys.

In the pit, the coal seam itself is the haulage road. Elsewhere, roads are built with a gob base and a 12-in topping of slack coal and cinders. Roads are maintained by a small part-time 'dozer, which also helps clean off the exposed coal in the pit.



Get UNIFORM SPEEDS throughout shift with
EXIDE-IRONCLAD POWER

Put *full shift availability* into your battery-powered locomotives, trammers and shuttle cars. With Exide-Ironclad power, they'll handle as much load during the last hour as during the first. Also, Exide-Ironclad Batteries assure you:

- safe haulage.
- instant starting and fast acceleration.
- no unscheduled down time, hence more production per man per shift.
- flexible, self-contained haulage units mean quick car changes, less idle loader time, higher mainline tonnage.
- low operating and maintenance costs.
- exceptionally long life—proved in more than 100,000 heavy-duty jobs.

Combined, these superior characteristics make Exide-Ironclad Batteries your best power buy . . . at any price.

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32

Exide Batteries of Canada, Limited, Toronto

"Exide-Ironclad" *Reg. Trade-mark U. S. Pat. Off.*

1888 . . . DEPENDABLE BATTERIES FOR 62 YEARS . . . 1950

U. S. Bureau of Mines

THOROUGH PREPARATION pays off when critical situations call for . . .

Cool-Headed Men

Diligent Study, Intensive Training and Careful Planning Eliminate Panic and Promote Decisive Action—Your Men Will Look to You for Leadership When the Pressure On You Is at a Peak—Think About It Now

THE FREQUENCY OF MINE EXPLOSIONS has been greatly reduced as a result of concerted effort by all parties interested in mine safety, but it cannot be assumed that such disasters have been entirely eliminated. If one should strike your mine, what would you do?

Bureau of Mines' Miners' Circular 25 contains this statement: "Usually, in every crowd there is a cool-headed man who is able to take charge of a lot of excited and more or less terror-stricken men, and he should be obeyed for the common good." This observation carries a special meaning for mine supervisors. If an emergency does occur you automatically should be that cool-headed man, and you will find all your men looking to you for advice as to what their next move should be.

Years ago a disastrous explosion took many lives at an American mine, but 47 others were rescued four days after the catastrophe because they were ruled by common sense and did not succumb to panic. Speaking of the rescued men, Circular 25 says this: "The brattice work done by these 47 men was excellent, their foresight in short-circuiting the air was correct, and their conduct was sane and courageous." This is high praise, well-deserved. These 47 men become models after which other mining men might well pattern their emergency preparations.

Fear and apprehension are natural human responses when grave danger threatens, but panic is unnatural. Panic results when men are not prepared for danger and lack leadership.

Unpreparedness in turn is a result of lack of knowledge, neglected training opportunities or poor planning. Each of these conditions may exist in various degrees, as follows:

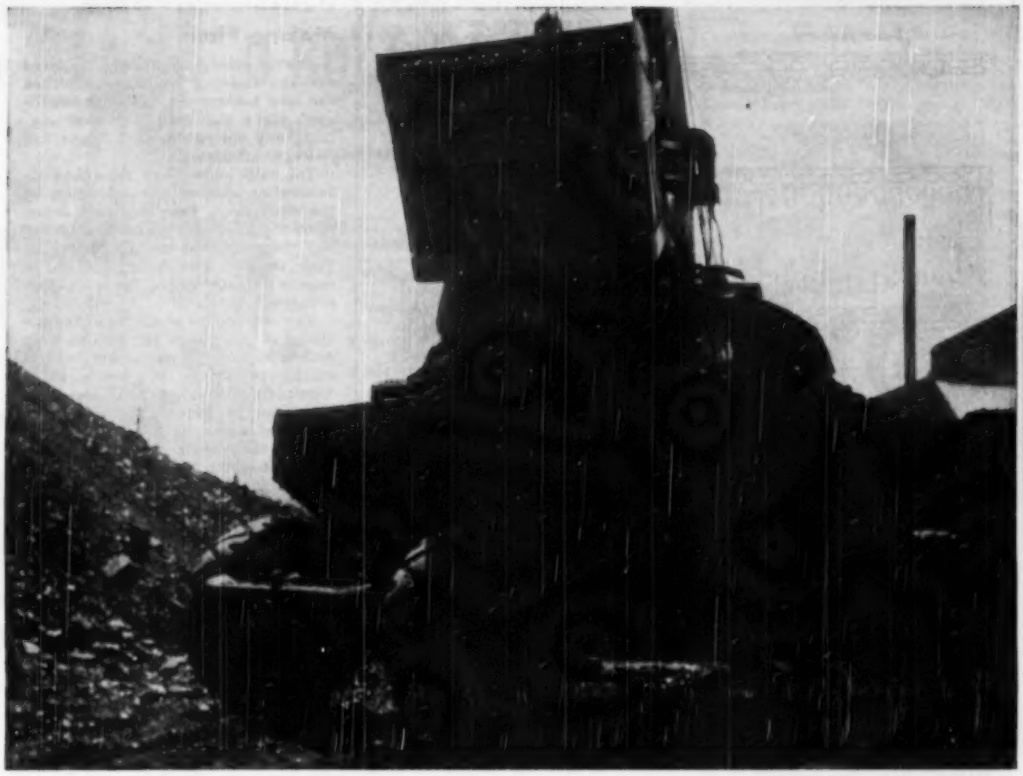
In respect to knowledge, the various degrees are:

1. No knowledge of conditions before or after an emergency.
2. Adequate awareness of conditions before an emergency, but only a hazy notion of what might exist after a fire or explosion.
3. A rather complete knowledge of normal mine conditions and well-developed knowledge of what might be expected after a fire or explosion.

Regarding training opportunities, these conditions may exist:

1. Absolute indifference to all safety training.
2. Half-hearted preparation—skip-

B.F.Goodrich



ALL-NYLON tire record:

no blowouts, no bruise breaks, no flex breaks!

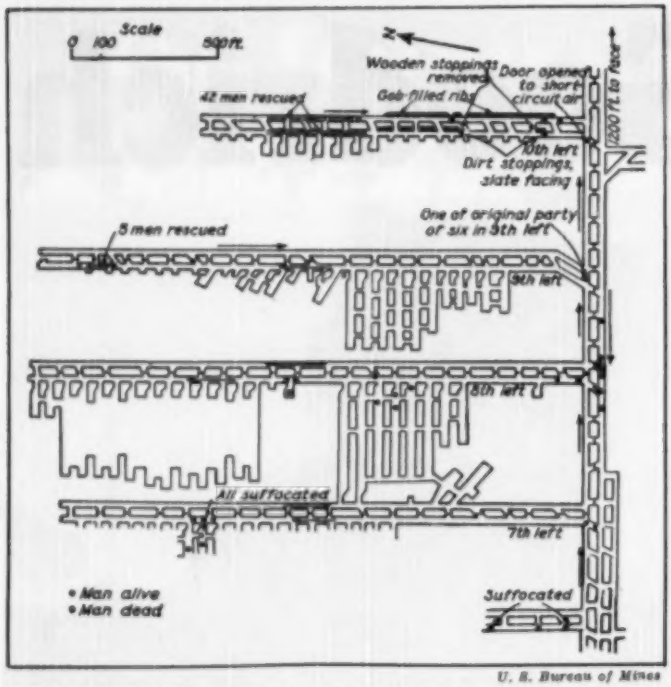
THE B. F. Goodrich ALL-NYLON tire is proving successful in mining operations all over the country. The record speaks for itself — up to now no blowouts, no bruise breaks, no flex breaks! And that includes severe operating conditions in mines where flex and bruise failures formerly were common.

Along with nylon, BFG uses weftless construction; no cross-threads in tire plies to hamper cord action and allow some cords to stretch out. Therefore, tire growth is reduced—tires last longer.

Where tire costs are high because of blowouts, flex breaks and bruise breaks, B. F. Goodrich all-nylon tires can make definite savings.

The new, all-nylon construction (used in the *Universal* and *Rock-Logger* tires shown at right) is typical of the continuous improvements being made in tires by B. F. Goodrich. Long ago, BFG engineers developed special types of tires for mining service. For more information on the way B. F. Goodrich tires can do more work and save you money, call your BFG dealer — or write directly to *The B. F. Goodrich Company, Akron, Ohio.*

Study, Train and Plan to Eliminate the Fire-and-Explosion Threat



U. S. Bureau of Mines

EFFECTIVE BARRICADES, the result of good workmanship and sane actions, saved 47 men who were rescued four days after the explosion from the section shown here.

ping most training opportunities, taking advantage of some but dreaming or "doodling" while the program is being presented.

3. Conscientious effort to absorb knowledge on conditions before and after mine emergencies and to assimilate the experience of others who have faced the situation.

From the planning standpoint, the degrees are:

1. No emergency plans whatever, and a willingness to gamble that "it won't happen here."

2. Half-made plans with a lot of important details left out.

3. Complete emergency plans based on recognition of the hazards that accompany and follow a fire or explosion.

The closer you approach the third degree in each of these categories the cooler your head will be if you are ever called upon to lead men to safety from a stricken area.

Here are suggestions for preparing for the worst a mining man can imagine—a fire or explosion.

Getting Information

Review the material you studied in preparing for your state examination —then review the examination.

Study the posters displayed at your mine outlining the responsibilities of the staff.

Secure a good textbook on mine ventilation and study it to become familiar with the principles that govern air movement in coal mines.

Consult Bureau of Mines publications for recommended practices. Your federal inspector will help you select pertinent literature.

Confer with your state mine inspector to get a good picture of local conditions and the history of mine-rescue operations in your region.

Talk with men who have had experience in combating mine fires or explosions. They will remind you of details that otherwise might escape your attention.

Keep abreast of development in your mine by studying the mine map, giving special attention to changes in ventilating circuits, pressures and volumes that result from expansion.

Investigate the subject of barricades. Know why, when, where and how to build them.

Absorbing Training

Take advantage of first-aid and mine-rescue training, making every effort to absorb all the skills and knowledge offered. Every training session offers something of value for every man in attendance. If you pay strict attention you will find your interest aroused, and you will begin to ask questions. When you ask questions you are learning. Above all, don't leave a first-aid or mine-rescue training session with unanswered questions in your mind—the subjects are too important.

Read and study such information booklets as the question-and-answer tract prepared by the National Mine Rescue Association.

Watch others in training because demonstration is one of the elements of good instruction.

Making Plans

The knowledge you have acquired and the training you have absorbed can now become the basis for intelligent plans that will help you confront any emergency in a "sane and courageous" manner.

You will know your mine and its ventilating system. Through study of the ventilation map you can determine the effect of damaged or blown-out stoppings on the air supply to your section. Plan your line of escape with due regard for air-supply derangements.

You must know at all times the position of your men throughout your section so that you can assemble them quickly in emergencies. Know where barricading supplies and necessary tools can be found. You may need food and water, so take it with you as you make your escape or as you retreat to your barricade site. If you lead a group under these circumstances consider conservation of your cap lamps and safety lamps.

Remember to leave a note in a main opening if you find it necessary to enter a barricade. This will help rescue crews.

A useful aid in planning is transparent tracing paper. Lay it over your mine map, trace the outlines of your section, knock out some stoppings and draw the new ventilation pattern. This will help you predict changes in air currents that might affect your safety later.

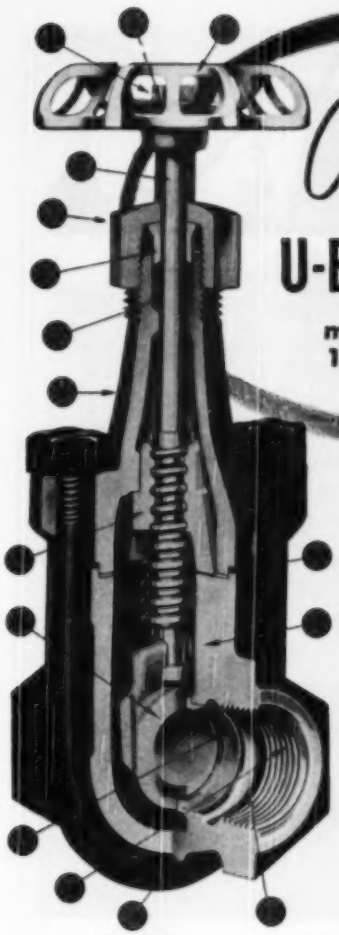
The list of details you must consider in your planning could be expanded to great length. You will recognize many others as you study mine conditions before and after fires and explosions, and as you hear the experiences of mine-rescue veterans. Include provisions for handling these details in your plans. Forewarned is forearmed!

The advantages you gain from intensive preparation for the worst possible situation are important to you and your men. You may save lives by prompt correct action, you may be instrumental in protecting valuable property by doing the right thing at the right time and, last but not least, you may be able to prevent disasters through the knowledge and training you have received.

IF YOU WANT bulletins or more dope on equipment described or advertised in this issue, use the postage-free card facing page 128. It's there to serve you.

Only Jenkins U-BOLT GATES

measure up to this 16-point standard

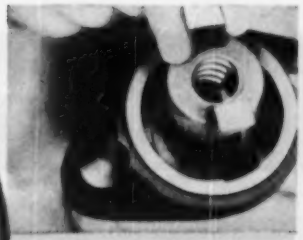


1. Perfect-Grip Handwheel
2. Valve Index Plate
3. Secure Wheel Nut
4. Heavy Manganese Bronze Spindle
5. Large Packing Nut
6. Self-centering Packing Gland
7. Deep Stuffing Box
8. Heavy Duty Bonnet
9. Unique Renewable Bonnet-Saver Bushing
10. Body-Bonnet Safety Joint
11. Extra-Wide Gauge Reversible Bronze Wedge
12. Heavy-Duty Body
13. Bronze Seat Rings, Expanded In
14. Full Length Pipe Threads
15. Liberal Diaphragm Clearance
16. Strong U-Bolt

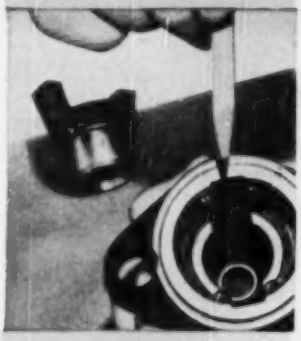
PRESSURES

Screwed	Flanged
150 lbs. Steam	125 lbs. Steam
225 lbs. O.W.G.	175 lbs. O.W.G.

Bronze Mounted or All Iron—Sizes ¼" to 3"



BONNET SAVER BUSHING — No need to junk the bonnet when operating threads are worn. Just slip in a new, patented "Bonnet-Saver Bushing" and have good-as-new thread engagement.



EASY TO CLEAN — You can really get into the bonnet of this valve to clean out the chamber above the operating threads.

RUGGED CONSTRUCTION — Here's proof. When the U-bolt nut was tightened down with a 14" socket wrench until the high tensile steel bolt broke, the heavy duty body and bonnet did not crack!

TROUBLE IS RULED OUT! Check these 16 advanced features—for wear-resistance . . . for ease of maintenance. From handwheel to diaphragm, notice how thoroughly trouble has been ruled out in designing this U-bolt valve. No other valve in its class measures up to Jenkins U-bolt Gate on all these points, many of them exclusive.

You can take it apart and put it together again in two minutes, and it's a cinch to clean. When operating threads become worn, just slip in a new "Bonnet Saver Bushing" and restore it to new-valve efficiency. It's a favorite for those plumbing-heating, mine, mill or any services where excessive sediment is tough on valves and where freezing is a hazard.

For "renewability" without waste, bull-necked endurance, and low upkeep cost, you can't beat Jenkins U-bolt Valves. Yet they cost no more! Full details and specifications in new circular, Form 179-B. Jenkins Bros., 100 Park Avenue, New York 17. Jenkins Bros. Ltd., Montreal.

Sold through leading Industrial Distributors

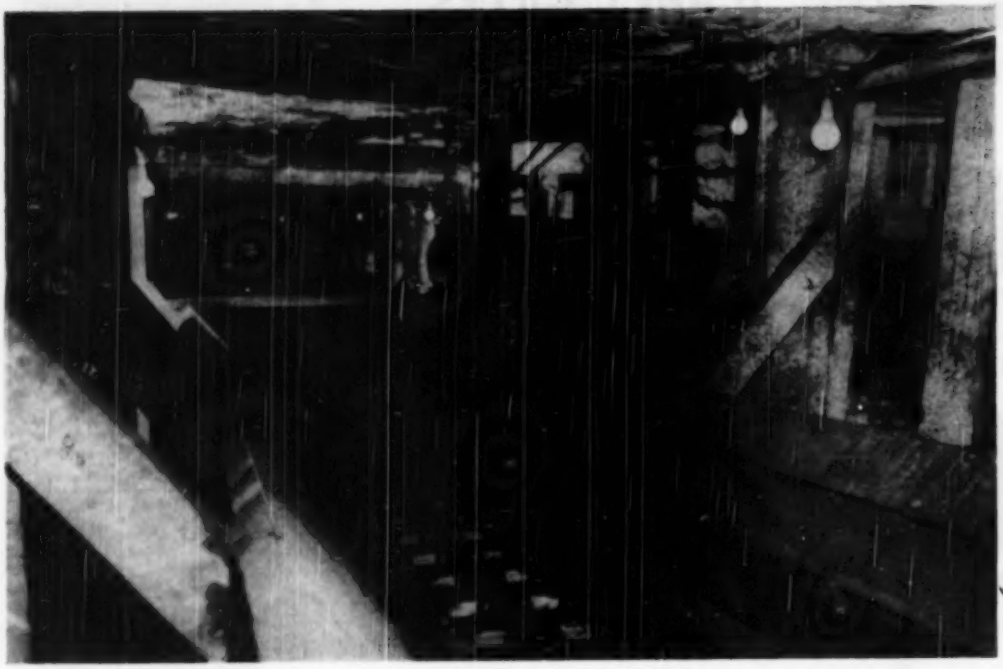
JENKINS VALVES

LOOK FOR THE DIAMOND MARK

SINCE 1864 — TRADE JENKINS MARK

Jenkins Bros.

Operating Ideas



INBY VIEW from near the center of the surge bin shows wooden side panels that lift bin capacity to 50 tons.

Surge Conveyor Cushions Loads to Main Line

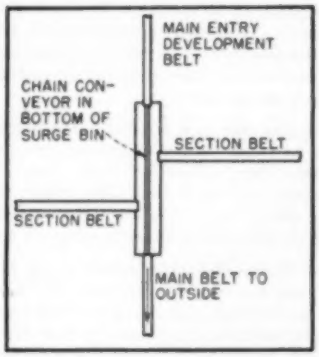
A LONG SURGE BIN interposed in the main-line conveyor has materially increased efficiency at Bolair No. 1 mine, Pardee & Curtin Lumber Co., Bolair, W. Va. With the surge bin, the main-line belt conveying to the outside and tipple is uniformly loaded and there is no need for automatic or manual interruption of section conveyors to prevent overloading the main conveyor.

A 140-ft Jeffrey GW chain conveyor with standard side panels, shown in the accompanying drawing and photograph, was installed to receive coal from two section belts and the main-entry development belt and to act as a feeder to the main-line belt. To each side panel were added two 3x8-in planks forming a surge bin 3½ ft deep of approximately 50 tons capacity.

Operating speeds of the various conveyors are as follows: section belts and main-entry development belt, 385 fpm; chain conveyor in surge bin, 72 fpm; main belt to the outside, 240 fpm. The belt conveyors are Jeffrey 64A with Goodyear Coal-Flo 30-in belts. Total length of conveyor from surge bin to tipple is 2½ mi. The coal is loaded with Joy 14 BU machines served by 4- and 6-ton shuttle cars.

The surge bin allows high-speed operation of section belts, thus speeding up the dumping of shuttle cars. Also, the bin loads the main conveyor uniformly, giving it large capacity at low speed and with minimum spillage.

M. R. Weaver, superintendent, was responsible for installing this surge bin. It has eliminated several difficulties encountered in operating conveyor equipment.



SURGE BIN receives coal from main-entry development belt and from sections on right and left.

TRAVEL 25% FASTER... DISCHARGE 30% FASTER!

WITH BATTERY-POWERED SHUTTLE CARS

Proved By 95 Time Studies

Battery-powered shuttle cars have the following advantages demonstrated and proved:

SAFETY
Only battery cars are "permissible"

PRODUCTION
Can produce 10% more tonnage
Deliver more tons per man shift
Give 22% more ton-miles per shuttle car hour

PERFORMANCE
Include all design advances
Travel 25% faster
Discharge 30% faster
Are more dependable and predictable
Handle supplies easier
Reduce shuttle car change time
Can gob underground
Promote section efficiency

COST
Equal capital cost
Produce coal in shuttle car sections for approximately ½c less per ton** —in hand-loaded sections, as much as 75c a ton

A "MUST" FOR CONTINUOUS MINING MACHINES

Battery-powered shuttle cars enable continuous mining machines to work 10% more of the shift.

AND...

Two-shift operation is now possible with only one set of batteries.

GOULD

STORAGE BATTERIES

GOULD-NATIONAL BATTERIES, INC.

Corrosion Auger Cleans Fouled Mine Pipe

CORROSION AUGERS made for any sized mine pipe have cleaned some 8,000 ft of pipe line at Dun Glen mine of the Hanna Coal Co. Much of the pipe would otherwise have been discarded.

AFTER SEVERAL YEARS' EXPERIENCE on drainage in coal mines and the difficulties encountered in pipe-line failures because of corrosion, Russell Spencer, preparation engineer, Dun Glen mine of the Hanna Coal Co., Dun Glen, Ohio, decided to do something about it, with the hope of making the job a whole lot easier for those who now are responsible for this particular phase of mining.

Mr. Spencer designed and assembled a corrosion auger that can be made to fit any size of pipe. It can be used on a 20-ft joint of pipe and has been used to clean 600 ft of pipe without removing the pipe from its permanent location. After the corrosion auger is forced through the pipe, all that is necessary to remove the sludge that remains is to flush the pipe out with either water or air.

The auger has been in use at Dun Glen mine since January, and has cleaned approximately 8,000 ft of pipeline. It has been found that much of the pipe would have been worthless had it not been for this development, since corrosion had completely stopped up the pipe and it would have been impossible to re-use it without the auger.

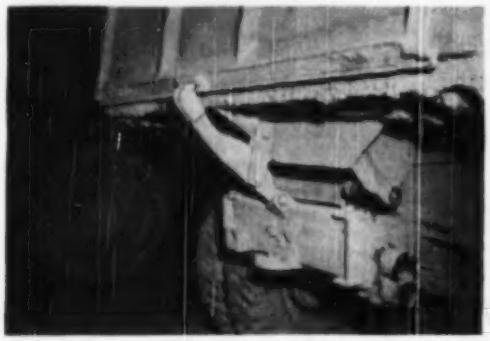
"Developments such as this prove beyond a doubt the importance of encouraging men to present whatever ideas they may have for improvement of their own or other working conditions and problems," writes one of the top officials of the company, in commenting on Mr. Spencer's development. "That's a worthwhile project for management, and all employees should be encouraged to cooperate in presenting their ideas," he emphasizes.

The auger is made of ⅝-in round cold-rolled steel, 30 in long, with one end of the rod heated and drawn out in the shape of the well-known butterfly bit, or similar to the bit used on the miner's coal auger during hand-loading days.

Three inches back from the bit 20 ¼-in holes are drilled through the rod 1 in apart, with each hole offset slightly to the left throughout the 20-in length. Quarter-inch pins of cold-rolled steel are cut to fit the inside diameter of the pipe to be drilled and, of course, are spot-welded.

At the end of the rod, a ½-in pipe coupling is welded to permit connecting as many lengths of ½-in pipe to an electric drill as is necessary for the length of pipe to be cleaned.

To assure proper centering of the pins, they are spot-welded in the following manner: For example, to make an auger for 2-in pipe, the pins are cut 2-1/16 in long and inserted, one at a time, in the rod as it is forced into the pipe by hand. After all the pins have entered the pipe, the auger is turned freely several revolutions to insure proper centering, then slowly pulled back to the edge of the pipe and the last five pins inserted in the rod spot-welded. The auger then is run through to the opposite end of the pipe and, as the pins start coming out of the pipe, they are spot-welded from the first pin back to those that were first welded.



TAIL-GATE LATCH is thrust upward to engage catch as truck bed approaches level position, thus locking automatically.

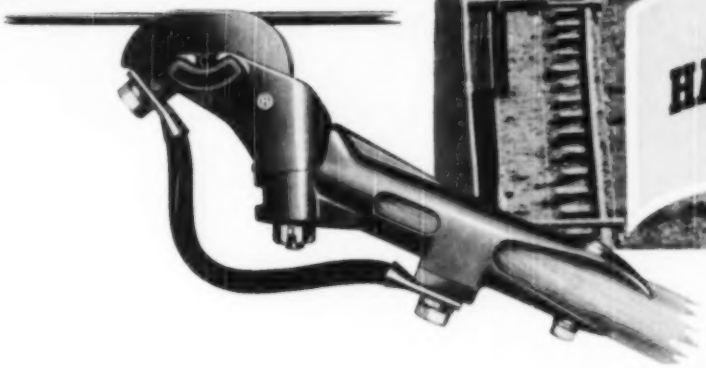
DUMPING ACTION of truck bed automatically forces latch loose, allowing tail gate to swing open.

Automatic Latch Saves Truck-Dumping Time

AN AUTOMATIC LATCH for the tail gates on end-dump trucks speeds unloading and enables the truck driver to start away after dumping without having to get out and lock the gate shut. The latch is designed, made and installed on the trucks at the Chinook mine, Ayrshire Collieries Co., Brazil, Ind.

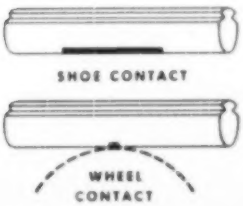
Shown in the accompanying photographs, the latch is so pivoted and mounted between the truck chassis and the truck bed that it moves downward and releases as the bed rises to dump and moves upward and locks over the catch as the bed returns to level position. It requires no attention from the driver.

For Heavy Duty Haulage, USE SHOES



● If you want a smooth, dependable flow of power from the trolley wire to the collectors of your main haulage locomotives, use a collector that presents the largest possible area to the wire. That's why shoes — O-B Type-L Trolley Shoes — are better suited to heavy duty haulage than trolley wheels. Here's the reason: Shoes, in the first place, do present a larger surface for current transfer than the wheels. Because of this, current passing from the wire to a trolley shoe passes through what might be called a "line" contact, as contrasted to the "point" contact between the wire and a wheel. An abrupt jog in the wire will break the contact between a wheel and the wire, interrupting the power flow. When this happens, there is a good deal of arcing, for the flow of current has been concentrated through a very small area. However, the current flow is distributed through a series of points in the case of the shoe, and since the shoe is less likely to break contact with the wire, the chances for power interruption and arcing are much less. You see, the pivotal center of the shoe is located in the center line of the wearing surface, eliminating any tendency for the shoe to tilt because of friction between the shoe and the wire. Further, a jog in the wire, while depressing the leading end of the shoe, will press the trailing end more firmly against the wire. The reverse is true when the center of the shoe passes the jog.

Your O-B representative will be glad to tell you more about the advantages of shoe current collection. Ask him what it can do for you in your mines.



Field tests show that under identical conditions of heavy electrical load, trolley shoes outlast wheels many, many times. This is because of reduced arcing and burning with the use of shoes. The sketches show the difference in surface covered by the wheel or shoe in contact with the wire.

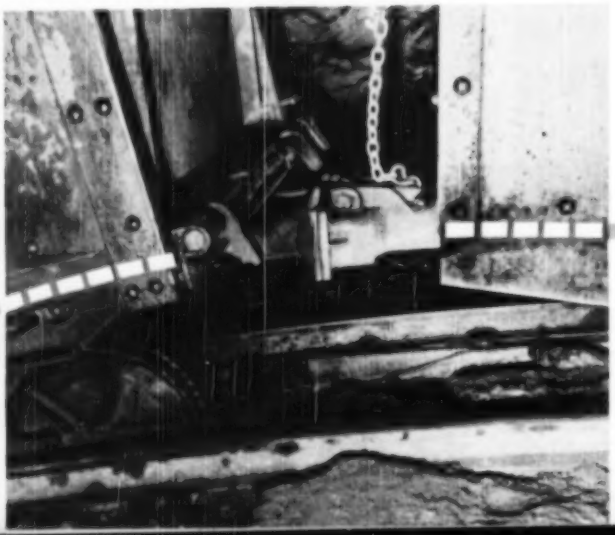
Ohio Brass

MANSFIELD OHIO, U. S. A.

CANADIAN OHIO BRASS CO. LTD. NIAGARA FALLS ONT.

HAULAGE WAYS Jr.

For positive COUPLER INTERLOCK AT SHARP GRADE BREAKS



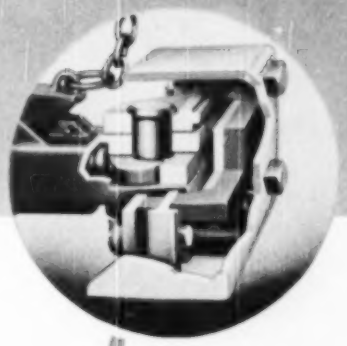
O-B Couplers permit cars to ride the track on this dip without binding at the coupler faces.

Close-up of two mine cars on a 40 foot radius knuckle. Only with considerable flexibility in draft gear mountings can more than one car successfully negotiate such curves.

O-B Automatic Couplers have two features that assure positive coupler interlock even at drastic dips and knuckles. Snug fit between the male and female heads is maintained by a specially designed cam, mounted on the female head, which drops into a notch in the male head. Tension between the two heads increases the tendency of the cam to seat itself in the notch, and to prevent lateral or vertical movement between the coupler faces.

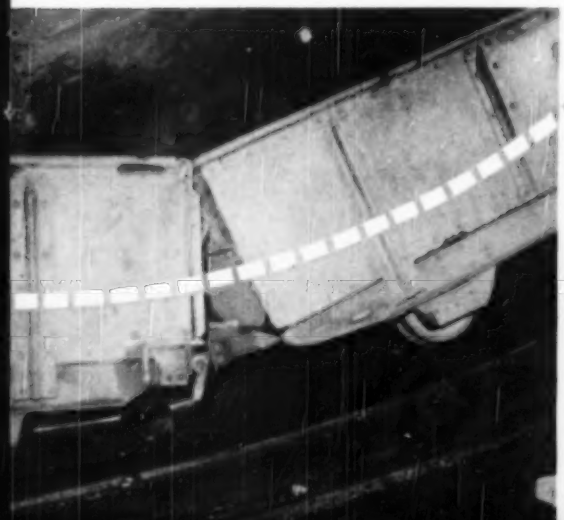
The other feature is the flexible draft gear mounting which permits fourteen degrees of vertical swing for the coupler heads. This flexibility permits trips to move over dips and knuckles of rather short radii; on one property, O-B Couplers easily negotiate vertical curves with radii as short as 40 feet.

Under adverse grade and curve conditions, you need the operational flexibility which O-B Automatic Couplers provide. Write for details as to how they can be adapted to your haulage system.



In the upper illustration, a section of the female coupler head is removed to show the cam in position in the notched portion of the male coupler head.

Below it, a similar cut-away view shows the rubber draft gear, which is flexible enough to permit 14° of vertical swing for the coupler head.



Ohio Brass

MANSFIELD OHIO, U. S. A.

CANADIAN OHIO BRASS CO., LTD., NIAGARA FALLS, ONT.

HAULAGE WAYS Jr.

Simple gage

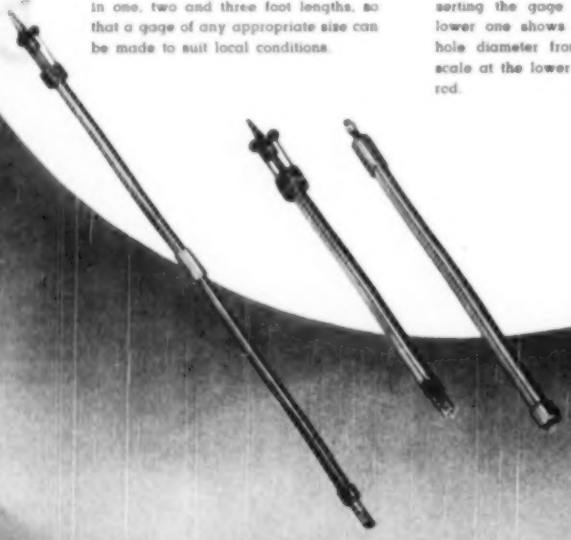
checks bolt hole diameters

Diameters of roof bolt holes are easily measured at any point within the hole with this simple, accurate hole gage. With it, bolting crews can make occasional checks to make certain that changed roof conditions, bit wear, or improper drilling habits are not causing a variation from the allowable range for hole size. The gage is calibrated to read hole diameters in 1/16-inch increments within a range of 1-4/16 to 1-10/16 inches. The allowable range for O-B Roof Support Expansion Shell and Plug installation is indicated on the scale from which diameters are read.

Help your bolting crews save time, and to do a good bolting job at the same time, by equipping them with O-B Roof Bolt Hole Gages.

The length of the basic hole gage is 30 inches. Calibrated extensions are made in one, two and three foot lengths, so that a gage of any appropriate size can be made to suit local conditions.

The gage is easily used. In the top illustration, the operator is shown inserting the gage in the hole; the lower one shows him reading the hole diameter from the calibrated scale at the lower end of the gage rod.



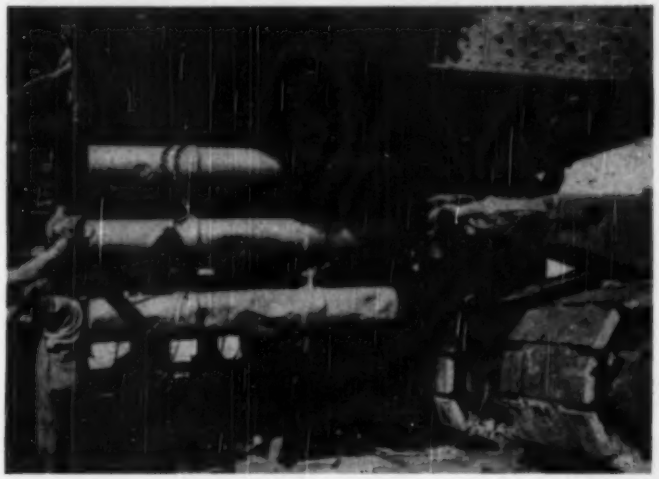
405DRE

Ohio Brass

MANSFIELD OHIO, U. S. A.

CANADIAN OHIO BRASS CO. LTD. NIAGARA FALLS, ONT.

Stone Stoppers Prevent Damage to Strip Shovel



BIG DENTS IN STEEL-PIPE STONE STOPPERS show how they have protected the shovel from damage by heavy rocks.

CHANCES OF DAMAGE to equipment by rocks rolling under the frames of large stripping shovels has been greatly reduced by adding stone stoppers to the shovels at Georgetown No. 12 mine, Hanna Coal Co., Georgetown, Ohio.

A stopper consists of an assembly of three 12-in steel pipes 8 ft long hung by a wire rope. To weight the pipes, they are filled with iron punchings and cover plates were welded over the ends. Connections between pipes are hinged joints that permit free swing.

The accompanying photograph, made in 46A "Tiger" pit, shows many dents in the lowest pipe, several in the next and a few in the top pipe, testifying that heavy rocks have rolled down on the Marion 5561 shovel.

The first stone stopper was put on about 2 yrs ago. Now all four big shovels, with dippers of 35- to 50-yd capacity, are so equipped. In the 5 to 6 yr of operation before devising this protection, at least 25 cases of rock damage occurred.

New Forge Built From Old Boiler

DO YOU WANT to dodge some of the cost of expensive brick work next time you build a forge for your mine shop?

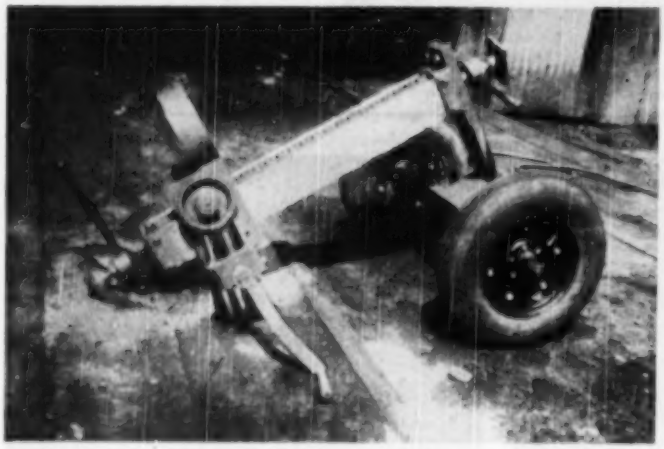
If you do, pick up an old boiler from a junk yard or a scrap heap and cut it to fit your needs, as shop men did at the central shop of the West Kentucky Coal Co., East Diamond mine, Madisonville, Ky. The inside is lined with firebrick. An electric motor, seen at the lower right, turns a high-speed fan that provides air for the firebed through a standard No. 3 tuyere.

Shop-Built Battery Lifter Does Other Jobs Too

A WELDED-STEEL FRAME mounted on wheels, built especially for lifting heavy storage batteries out of big Euclid cabs, also hoists diesel engines and transmissions at Tecumseh Coal Corp., Boonville, Ind.

The hoisting frame, shown with W. E. Bishop, its builder, now is equipped with a hand winch but soon will have a hoisting motor with reduction gear. The goose-neck hoisting frame is the right height to extend through the cab door and over the battery and transmission of the Euclid.

DRILL POSITIONS are achieved by a hand crank, Roy L. Gayhart, shop foreman, demonstrating. As the crank is turned, the cradle is raised or lowered by a single-reduction gear and sprocket engaging a roller chain (right).



EASY MOVEMENT is a design feature. At the left, the mount is shown tipped over, ready for pulling. At the right, Mr. Gayhart shows how easy the moving job actually is.

Bolting-Drill Mount Uses Two Jacks and Roller Chain

AFTER MORE THAN A YEAR of experimenting with roof bolting, the Boone County Coal Corp., Sharples, W. Va., has standardized on rotary-electric drilling and equipped each of the 12 sections of the mine with a rubber-tired drill mount designed by Roy L. Gayhart, shop foreman, and built under his supervision in the mine shop at Sharples.

Jeffrey A7 drills, the same as employed for drilling coal, are used on these mounts. To feed the drill, the cradle is moved upward by a hand crank. The "rack" consists of a piece of roller chain backed by a lightweight steel channel and engaged by a sprocket on the cradle. Rollers on the cradle prevent its binding on the guides. Screw jacks on the top and bottom permit a considerable range of adjustment.

Using tungsten-carbide bits operated at 938 rpm by the drill, a 42-in-deep hole can be drilled in 1 min. A two-man bolting crew keeps up the roof bolting for a 12 BU Joy unit that requires 60 to 80 bolts per shift. While one man drills, the other man installs the bolts.

Cost of materials for a mount is $59 and the shop-labor cost of building is $100. For the type of roof bolts used, and for what roof bolting has accomplished at this property, see p 74 of this issue.

OUR WELCOME MAT IS OUT for any good idea, "kink" or "gadget" you've successfully put to work at your operation. There are no rules either—just describe how your idea works, in your own words. COAL AGE will gladly pay you $5 or more for each acceptable "Operating Idea" on publication. Address: The Editor, COAL AGE, 330 W. 42nd St., New York 18, N. Y.

Performance records prove it

"MOST DEPENDABLE"

You can count on years of trouble-free performance when your coal is cleaned by the Chance "heavy density" Sand Flotation Process. All parts of the cone and its auxiliaries are sturdily built for hard, continuous service. All work together as a single, well-functioning unit. Specific gravity of mixture remains constant and is unaffected by fluctuations in tonnage or composition of coal. We believe this equipment will give you:

Highest separating efficiency — greatest recovery of salable coal, close to 100%; greater elimination of refuse. Also, from a single Chance Process unit you can obtain a low ash product, medium ash product, and a reject product.

Highest degree of flexibility — ability to handle coal at operating gravities from 1.35 to 1.65, with size range as wide as 10" x ¼" to one washing unit.

Lowest cost per ton cleaned — low cost power, operation, maintenance, depreciation.

Easiest operation — change-over from one washing gravity to another can be made in five minutes, simply by opening or closing valves . . . all under one-man control.

Recover *more* salable coal at a *saving*. You gain both ways when your coal is Chance Process cleaned. Also, it's one of the most effective ways to meet coal's fast-increasing competition. Our engineers will be glad to cooperate with you in solving any of your coal-cleaning problems.

CHANCE PROCESS

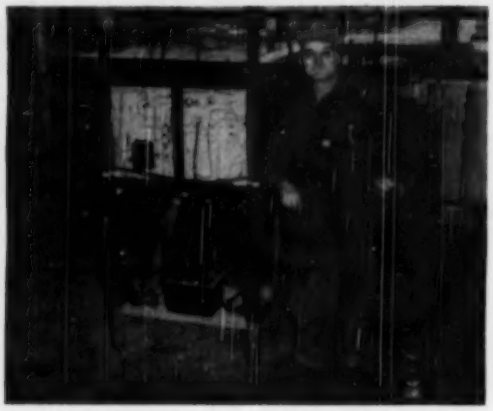
THE HEART OF THE PREPARATION PLANT

UNITED ENGINEERS & CONSTRUCTORS INC

NEW YORK 17 • PHILADELPHIA 5 • CHICAGO 2

WITH A BACKGROUND OF OVER SIXTY YEARS' EXPERIENCE

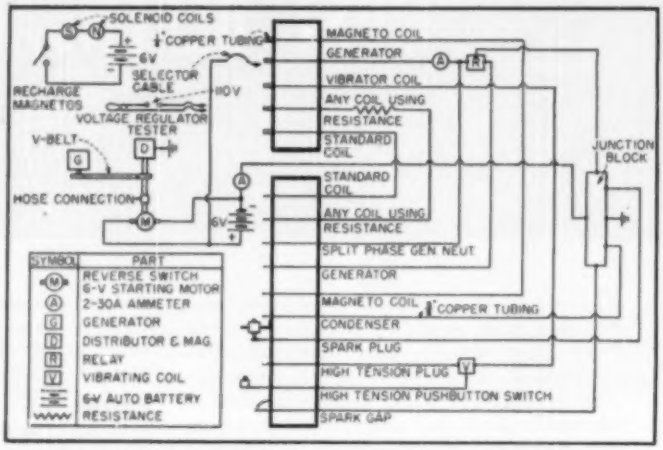
Mechanic Builds His Own Test Stand



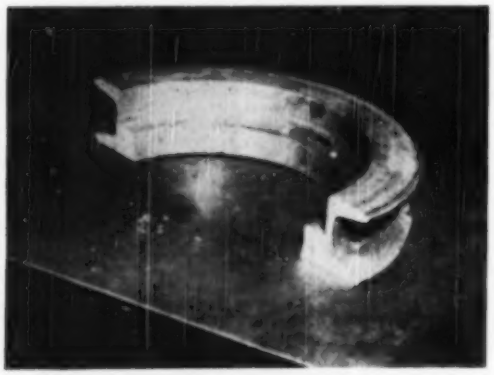
SHOP-BUILT TEST STAND shows conditions of truck electrical components. Numerous circuits, laid out by Mr. Rothrock (right), are clarified in wiring diagram shown below.

HUBERT H. ROTHROCK, garage mechanic, Blackfoot Coal & Land Corp., Oakland City, Ind., has designed and built a test stand that will troubleshoot nearly every electrical component in a truck, including generators, starters, distributor heads, magnetos, spark plugs, voltage regulators, rotors and condensers. The whole assembly is mounted on rollers for easy wheeling around the garage.

Electric current is provided by a 6-v storage battery and a cable that brings in 110-v ac power from any wall outlet in the garage. A Delco-Remy K-11 truckstarter connected to the storage battery provides the driveshaft for the test stand. The driveshaft accommodates belts for speed reduction and power take-off. Mr. Rothrock has made several adapters fitted to the starter driveshaft for testing various units. Jigs, brackets, ring adapters, spring collars, friction plugs, pushbuttons and switches make the test stand flexible and useful.



WIRING DIAGRAM of test stand, which indicates how many different electrical parts can be tested.



Sheaves Halved for Easy Removal

MAINTENANCE COST of cable spooling and back-lash devices on shuttle cars in Bolair No. 1 mine, Pardee & Curtin Lumber Co., Bolair, W. Va., has been reduced by sawing the sheaves into halves.

Formerly, when a sheave needed replacement the whole unit had to be removed to lift the sheave from the shaft or pin. Now, with removal of six bolts from each half, the whole sheave comes off readily.

A stuck sheave is a common cause of damage, the cable usually wearing only one side of the sheave. The worn half is all that need be removed.

Replacement sheaves are cut in half in the mine shop immediately after receipt and the halves are stored in the supply room.

NEVER BEFORE

—a supreme highway tire with positive off-the-road traction!

- **NEW NON-SKID SAFETY**
  —on spearheaded tread—in rain, snow, slush, sleet.
- **NEW ALL-ROAD, ALL-LOAD MILEAGE**
  —vastly reducing all tire costs.
- **NEW JOB-FITTED TREAD COMPOUNDS**
  —to fit every on-and-off-the-road operation.
- **WITH TIME AND TON-MILE SAVINGS NEVER POSSIBLE BEFORE**
  —no more job-failure layover on or off the road.

MADE TO ORDER FOR YOU

In the most rugged strip-mining operation—over jagged roadbeds, up steep, rock-strewn slopes, across roads covered with snow and ice—this new Mid-Century tire has achieved the impossible. Has met and conquered that off-the-road, on-the-road mining combination that no tire has ever challenged before!

COMPLETE PROOF AND JOB-FITTED SPECIFICATIONS BEFORE YOU BUY
A PHONE CALL DOES IT!
Contact your U. S. ROYAL Distributor TODAY

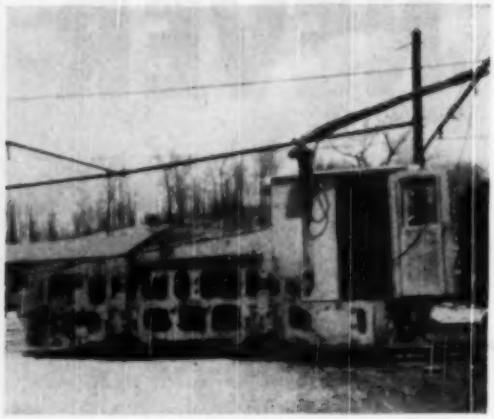
THE GREAT NEW *Mid-Century*

FLEETMASTER

U.S. ROYAL TIRES

UNITED STATES RUBBER COMPANY

OLD MINE LOCOMOTIVE, now rebuilt and made heavier, hauls 25-ton cars from strip-mine transfer station to preparation plant.



MOTORMAN'S CONVENIENCES include padded seat, heater with blower, and telephone.

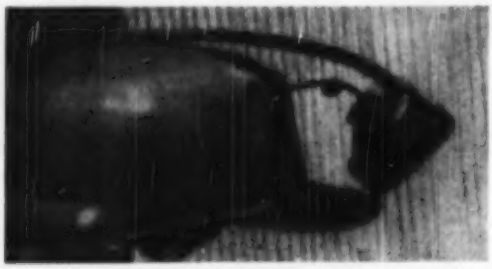
Mine Locomotives Rebuilt for Strip-Mine Haulage

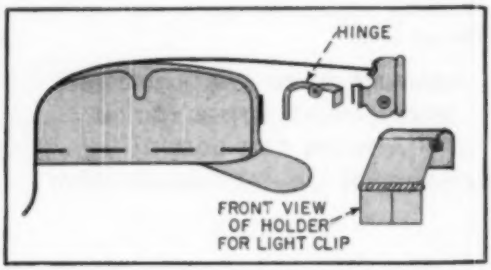
TWO OUTDATED MINE LOCOMOTIVES, once used in the company's deep mine, have been rebuilt and now, instead of being retired to pasture, are used to haul coal from the transfer station to the preparation plant at the Skibo mine, W. G. Duncan Coal Co., Greenville, Ky.

The basic units were Baldwin-Westinghouse 13-ton locomotives, dated 1918. Motors, wheels, chassis and basic controls are about all that now remains of the old locomotives. As can be seen in the accompanying photographs, a cab has been built for the motorman and steel plates have been added, sloping upward from the front end of the locomotive to the cab. These and other additions, strengthening the locomotive generally, run total weight up to nearly 16 tons.

The cab is equipped with a seat for the motorman and an electric heater, with blower, for comfort. A telephone inside the cab can be hooked onto a telephone wire running parallel to the trolley line at any point between tipple and transfer station, which are about 1½ mi apart.

No triprider is needed for hauling coal or returning empties. The motorman himself couples and uncouples the locomotive and the first car by means of a pullcord extending from the cab to the front and rear ends of the locomotive. Ohio Brass automatic couplers make coupling and uncoupling easy. The cars are Sanford-Day 25-ton, 8-wheel drop-bottom units. One locomotive easily pulls four and sometimes five of these cars, loaded with coal, up short grades as steep as 1½% and at speeds up to 25 mph. However, the average grade from transfer station to tipple is 2½% in favor of loaded trips. Naturally, as the photographs show, the track and roadbed are well maintained.





CAP-LAMP HOLDER is readily adjustable to focus light on work and can be attached to or removed from a hat in 2 or 3 sec.

Detachable Cap-Lamp Holder Focuses Light on Work

THE ADJUSTABLE CAP-LAMP HOLDER illustrated here was made by W. D. Thomas, electrician, Beelick mine, Standard Fire Creek Coal Co., Beelick Knob, W. Va., to permit a worker to focus his light directly on the work without moving his head or hat. Especially helpful to shop mechanics and electricians, the holder can be attached to or removed from the hat in 2 or 3 sec. It is easily made from strap hinges or other scrap.

Genius Not Needed!

YOU DON'T have to be a genius to get your own good "Operating Idea" printed in COAL AGE. Just tell us what it does and how it does it, in your own words, with photos or a rough sketch if possible. COAL AGE will gladly pay you for your trouble. See the notice on p 106.

PARIS MANUFACTURING COMPANY

Announces

THREE *NEW* DRILLS

The PARMANCO Coal Drill will drill 2¼ inch holes at a speed of up to six feet per minute in #5 coal. Equipped with heavy duty truck-type transmission and rear end and a complete hydraulic feed, the drill is operated by one man from the control seat. It is made in two sizes with a 12 h.p. or 25 h.p. gas motor and all units are completely self-contained and enclosed in oil-tight cases.

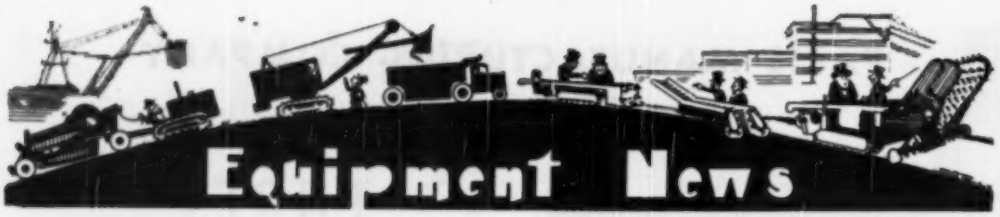
ALREADY USED by

Big Seed Collieries, Inc.	1	Enos Coal Co.	1
United Electric Coal Co.	6	Southwestern Ill. Coal Co.	1
Fairview Collieries Corp.	2	Truax-Traer Coal Company	9
Colonial Coal Co.	1	Refractory Field	
Little Sister Coal Co.	1	Harbison-Walker Refractories Co.	1
Homo-Sinclair Coal Mining Co.	6	Mexico Refractories Co.	1
Sherwood-Templeton Coal Co.	1	A. P. Green Fire Brick Co.	1

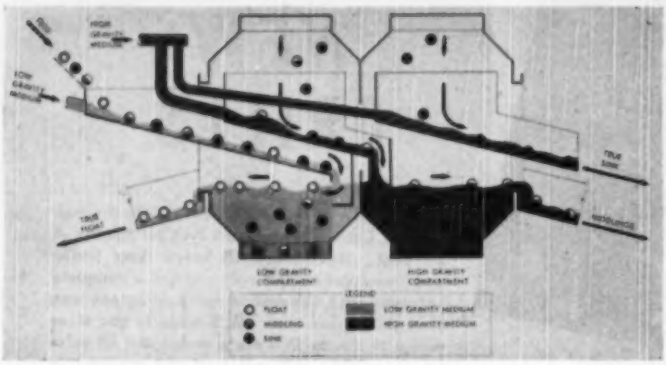
THIS UNIT IS DELIVERING 6-INCH SHOT HOLES — READY FOR LOADING at Better Than Two Feet a Minute ! ! !

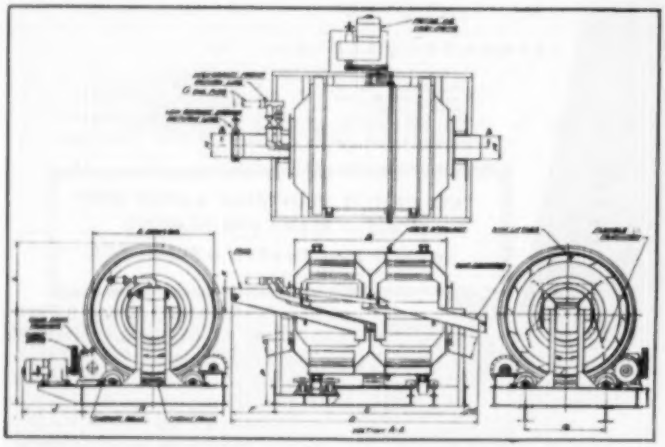
The new PARMANCO Hi-Speed Horizontal Drill is completely redesigned around a 40 h.p. engine with four drilling speeds which, in field tests, has cut one-third off the footage drilling time —a cost-per-drilling-foot saving that we are passing on to the strip mine operator and contractor at no increase in our price. In addition the drill is equipped with a starter and generator, dual type front wheels, truck type rear axle with mechanical brakes and a traction drive with both forward and reverse.

PARIS MANUFACTURING COMPANY Paris, Illinois



Equipment News





Two-Compartment Drum Separator Introduced (1)

A new drum separator, designed to reduce the cost of multiple-stage heavy-media separation, has been announced by the Western Machinery Co., San Francisco. Because it greatly reduces the equipment needed to produce a middling product, this multiple drum separator, according to the company, is expected to have wide application in the cleaning of low-grade coal and in the beneficiation of iron ores. Other minerals and ores also can be handled.

In coal cleaning and ore beneficiation, the heavy-media separation process generally separates run-of-mine into two parts—a float fraction lighter than the media and a sink fraction which is heavier than the media. Usually, the company states, this is highly effective in separating desired material from waste. However, in low-grade coal and ore, a substantial quantity of "near gravity" material may be present. Hence it becomes desirable to obtain a middling fraction which can be further crushed and rerun to increase recovery.

To efficiently obtain a middling product in the heavy-media separation process, two stages are required using heavy-media liquids of different gravities, the company points out. A float product is produced with the lighter-gravity media, a sink product with the heavier, and a middling product between. Heretofore, this has been accomplished by using two separate drums or cones together with necessary screens, ductwork and attendant equipment. This, it is stated, is nearly equivalent to two complete heavy-media systems, and has made two-stage separation economically impracticable in many instances.

The new WEMCO process reduces the complexity of two-stage separation by using a partitioned drum with a lighter media in one section and a heavier media in the other as illustrated. Material is passed from one section of the drum to the other, eliminating screens, conveyors and ductwork necessary when separate vessels are used. Only three conveyor systems leave the drum. They carry a true mineral product, a true waste product and a middling product. Recrushed portions of the middling product join the feed material and are returned to the drum. This very compact and efficient arrangement, according to the company, makes for savings in three important ways: fewer items of equipment, lower construction and installation costs, and greatly reduced floor space.

It is expected, the manufacturer states, that the new WEMCO Two-Compartment Drum Separator process (patent pending) will provide a clean product from coal and ore deposits for which profitable exploitation has not been heretofore feasible.—*Western Machinery Co., 760 Folsom St., San Francisco, Calif.*

This Coal Age Service Is for Your Convenience

THE POSTAGE-FREE addressed postcard facing p 128 will bring you more information from the manufacturers about any of the 65 items described on the following pages. Note the numbers of the new products and bulletins that interest you—then simply circle those numbers on the card and mail it to COAL AGE. Use the card also to get more information on any product described in the advertising pages of this issue. There is no obligation. Manufacturers are glad to send you catalogs, whether you want them for immediate use or future planning.

Kennametal Bits

for Lowest Cost Bolt Hole Drilling in *Any* Roof

These are a trio that can add new drilling speed to your bolt drilling job. There's one to save money on drilling time OVER ANY OTHER BIT. Regardless of your roof condition, there's a Kennametal Bit to drill FASTER and at less cost.

The RD Style drills better and lasts longer in boney, shale, and slate than conventional Kennametal coal bits. Its strong, stubby prongs, tipped with extra thick Kennametal cemented carbide gives long service life on HARD roof jobs. For drilling HARDER roof, like hard shale and slate, laminated sandstone, etc., the FD series drill offers maximum drilling power. While not as fast as the RD Style, it operates 20% to 30% faster than percussion drills. Either the RD or the FD series can be used on standard coal drills. Your Kennametal representative has many suggestions on mounting that he will be glad to give you FREE.

The PA series drills the hardest material like massive sandstone and limestone roof. Because of its single blade construction, it drills 10% to 20% faster than other percussion type bits.

Remember the Kennametal BIG 3 in your next bolting plans. They can save you money on drilling time OVER ANY OTHER BIT. Plan now to call a Kennametal representative in when you start to bolt up. He will be glad to give you the benefit of his specialized experience. He will also be glad to demonstrate—to make sure you have the BEST bit—SPEED, COST, and JOB considered—that your money can buy.

Contact him by writing — Mining Division, Kennametal Inc., Latrobe, Pa.

- **Less Bit Changing**
- **Lower Bit Cost**
- **Easier Drilling**
- **No Hole Taper**
- **More Secure Bolts**

KENNAMETAL®

Drill Bits • Machine Bits • Strip Bits • Rock Bits

Kennametal Inc., Latrobe, Pa.

Please send me FREE fully-illustrated Kennametal Folder M-105 that shows 21 different sizes of three different drill styles and complete details on how to get lowest possible roof drilling cost.

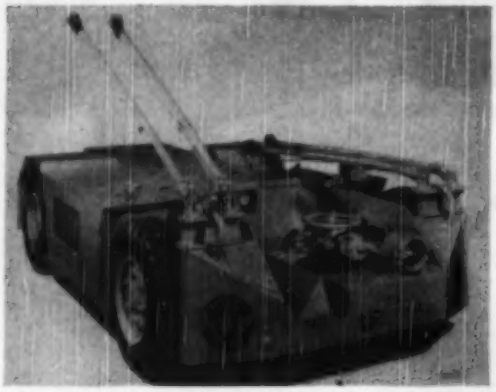
Name .....

Address .....

City .....

State .....

EQUIPMENT NEWS—If You Would Like to Know More About the Products on This and Other Pages of This Section, Use the Convenient Postcard Facing p 128

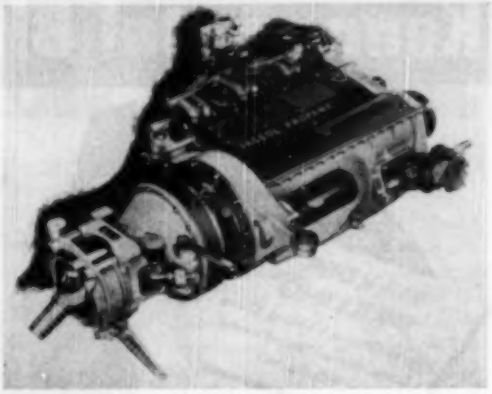


Tractor Run From Trolley or Battery (2)

Baker Type WE trolley tractor, designed to provide supplementary transportation for mines using belt conveyors as main haulage, is arranged for trolley or battery operation without the need for separate charging equipment. The battery floats on the line and is automatically charged while the tractor operates from the trolley in main entries. With suitable trailers, the tractor can be used for moving personnel, supplies and tools with through transportation to the working places. The following advantages are claimed by the manufacturer:

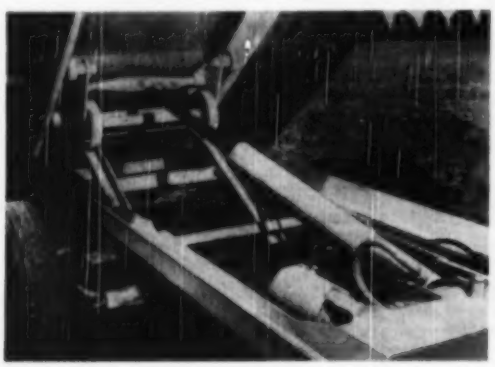
1. Safe for use in gaseous areas on battery power.
2. Speed and unlimited distance for long hauls.
3. No charging stations or equipment required.
4. Lower initial and replacement costs for battery.
5. Full-time availability, no lost time for charging.
6. Saves time formerly lost in transferring supplies.

Literature available.—*Baker-Raulang Co.*, 1250 *West 80th St., Cleveland 2, Ohio.*



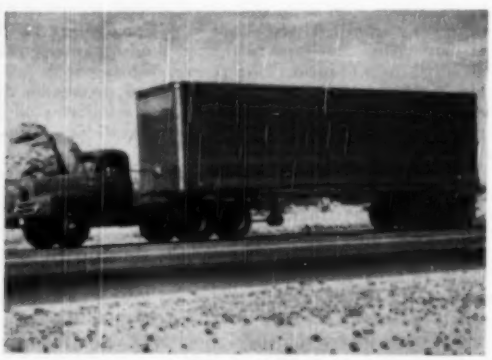
New Engines Use Propane (3)

Fageol engines utilize 125-octane propane fuel for savings of up to 40% in fuel costs as compared with gasoline or diesel engines, according to reports. A 10:1 compression ratio, permitting full utilization of the propane octane rating, is made possible by the design of the combustion chamber, which provides greater power output without increased bearing loads. Turbulence in the combustion chamber prevents accumulation of carbon, thus increasing time between overhauls by about 50%, the manufacturer predicts. Model 180 engine weight is 5.43 lb per brake horsepower, this unit having a displacement of 404 cu in. It is expected that propane engines will find their chief applications in trucks, construction equipment, saw mills, generators, drill rigs, crushers, hoists and other industrial applications. Units are available for horizontal or vertical mounting, right- or left-hand installation and clockwise or counter-clockwise rotation.—*Fageol Products Co., Kent, Ohio.*



Electric-Hydraulic Dump Hoist (4)

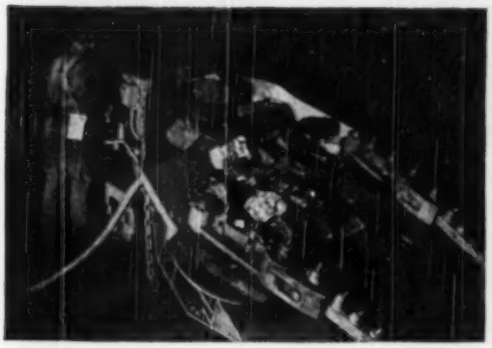
A 10-ton-capacity electric-hydraulic dump-truck hoist, furnished as an integrated unit, eliminates the need for a power take-off from the transmission. An extra battery installed with the unit drives the hoist motor. Other advantages claimed by the manufacturer are: simple operation and servicing, low initial cost, low mounting height because the sills of the truck body rest in the hoist channels, automatic overload protection, one-man operation, and adaptability to any 1- or 1½-ton truck.—*Timberlock Corp., Hastings, Neb.*



Tractors Feature Third Differential (5)

New International Harvester truck-tractors in the LF line, with gross weights from 22,000 to 45,000 lb, feature a third differential on the forward tandem axle, resulting in fewer moving parts and less complicated drive with shorter wheelbases, the company points out. Also, the number of lubrication points has been reduced approximately 50%. Other features are new valve-in-head engines; wide-tread front axles and improved steering linkage; steel-flex frames; and a new bogie suspension system.—*International Harvester Co., Chicago 1.*

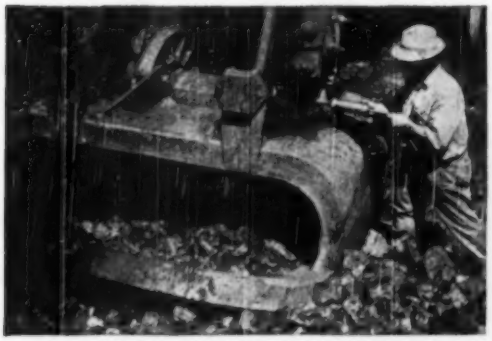
Only Cities Service Offers the Mining Field



1. LUBRICATION SERVICE— the services of an able lubrication engineer available at no cost. This man is thoroughly experienced in the lubrication requirements of every type of mine operation.

2. INDUSTRIAL HEAT PROVER SERVICE— This combustion analysis service detects inefficiency in steam generating units, 4 cycle Diesel engines and other fuel consuming units. A demonstration analysis is free.

All These Extras...at No Extra Cost!



3. COMPLETE QUALITY LINE— Coal mining machinery greases, Diesel oils, gear oils, hydraulic oils, pneumatic tool oils, cable dressings, compressor oils, motor oils and other fine petroleum products for the industry.

4. FREE LUBRICATION INFORMATION— A new booklet entitled "Coal Mining Machinery Lubrication" is available free. (See coupon below.) Also a wealth of other lubrication literature is available upon request.

CITIES SERVICE OIL COMPANY
Sixty Wall Tower, Room 679, New York 5, New York
Please send me without obligation:
Free ☐ "Coal Mining Machinery Lubrication" booklet,
☐ Lubrication Service Information, ☐ Heat Prover Service Information.

*Name*_____
*Company*_____
*Address*_____
*City*_____ *State*_____

AC Welder (6)

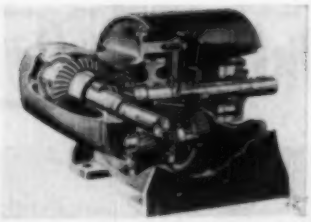
New ac transformer welder features fine adjustment of welding current and no moving parts, the manufacturer states. The transformer has conventional windings plus an additional winding and 20-v rectifier that provide dc current for an ac-dc adjustment reactor. The ac winding of the reactor is in series with transformer secondary and the arc, providing the reactance necessary to adjust welding current, while dc current saturates the iron of the reactor. A main control with five taps and a rheostat hand-wheel provide approximately 500 settings without changing welding- or ground-cable connections, according to the company. Absence of mechanical or electrical connections between power lines and welding cables, low rectifier voltage and elimination of moving parts make the units extremely safe to operate. The sets can be furnished for single phase 50- or 60-cycle current at 220/440, 440/550 or 220/440/550 v, in current ratings of 200, 300, 400 or 500 amp, with portable or stationary mountings. Attachments are available to adapt all sizes for inert-gas-shielded arc weldings or inert-gas-shielded spot welding.—*Hobart Bros. Co., Troy, Ohio.*

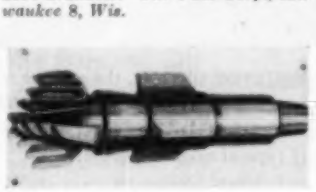
Auger Bits (7)

Firthite tungsten-carbide tipped bits, with hex shanks, have been developed for drilling holes for Armstrong, Airdox and Cardox shooting in sizes from 2¼-in dia, with 13/16-in hex shank, to 3¼-in dia, with 1⅝-in hex shank. Several diameters are furnished with a selection of shank sizes. Bit contour, it is pointed out, relieves cuttings to eliminate binding and permit faster drilling.—*Firth Sterling Steel & Carbide Corp., McKeesport, Pa.*

Speed Reducers (9)

Suited for use as speed reducers or increasers, the new Falk Type C concentric-shaft reducer and Type CB horizontal or vertical right-angle reducer are adaptable to electric motor, belt, gasoline engine, or chain driver, it is stated. Type C has an output speed range of from 1 to 1,170 rpm with input speeds up to 1,750 rpm, or higher if necessary, in units rated from 1 to 50 hp. Ratios range from 1.5:1 minimum to 970:1 maximum. Mechanical efficiency is from 96 to 98½ at full load throughout the life of the gears, according to the manufacturer. The right-angle reducer is available with the output shaft either vertical or horizontal. Specifications are: output speeds, 1 to 350 rpm; input speeds, up to 1,750 rpm; mechanical efficiency, from 96 to 98½% at full load, depending on number of gear trains; ratio range, 5.7:1 minimum to 515:1 maximum; power ratings, 1 to 50 hp. Bulletins 1105 and 2104 available.—*The Falk Corp., Milwaukee 8, Wis.*





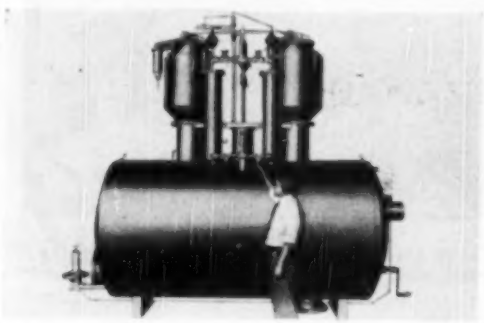
Rotary Drill Bits (11)

New Hawthorne Blue Demon bits for exploration and blast-hole drilling are now available in sizes from 1⅞ to

Two New Units Offer High Speed, High Capacity (8)

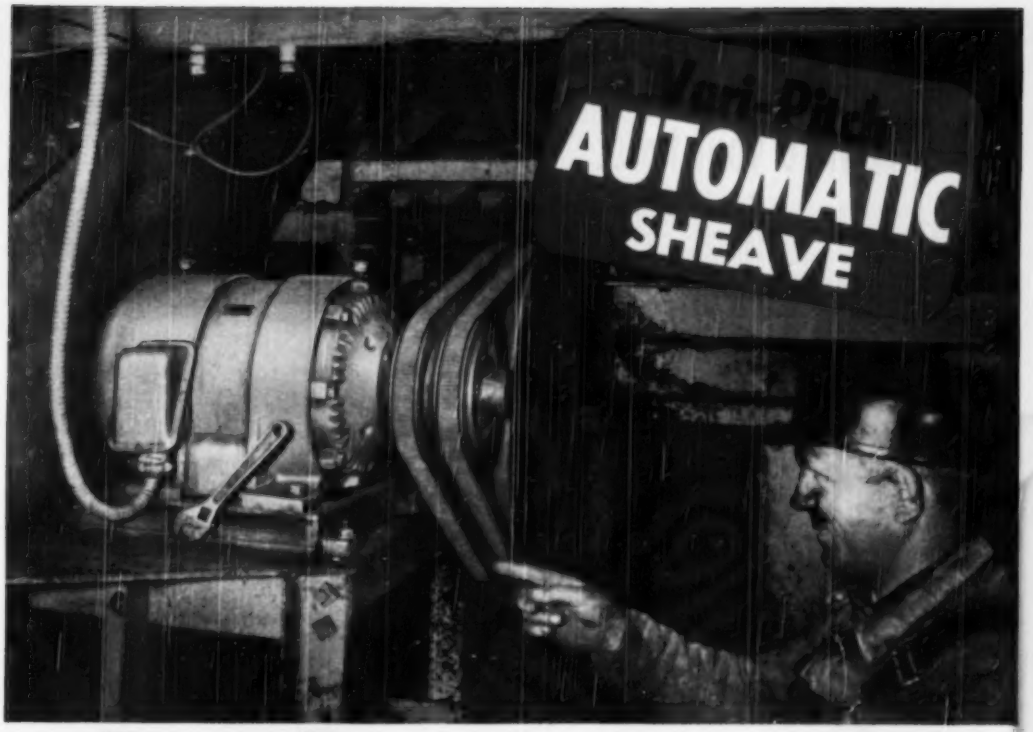
Two new Caterpillar high-speed, long-haul, high-capacity earthmoving units announced for fall production are a 4-wheel diesel tractor-wagon combination, the DW20 tractor and the W20 Wagon; and the DW21 2-wheel diesel prime mover equipped with the No. 21 scraper. Both machines, which are the result of 5 yr of intensive research, design engineering and job-proved application, according to the manufacturer, have a new 6-cylinder Caterpillar diesel engine rated at 275-hp peak capacity. The DW20 has five forward speeds ranging from 2.88 to 26.60 mph and one reverse of 3.72 mph. Capacity of the W20 wagon is 17 cu yd struck and 25 yd heaped, and the unit features hydraulically controlled doors and high-strength steel and all-welded body construction. The DW20 also can be equipped with the 20S bulldozer, a cable controlled unit with a blade length of 12½ ft; and with the cable-controlled No. 20 scraper, which has a struck capacity of 15 yd and a heaped capacity of 19½ yd, increasable to 22½ yd with 12-in. side-boards.

The 2-wheeled DW21 features five forward speeds, from 2.16 to 20 mph, and one reverse of 2.79 mph. Its accompanying cable-controlled No. 21 scraper has a struck capacity of 15 yd and a heaped capacity of 19½ yd, increasable to 22½ yd by 12-in sideboards.—*Caterpillar Tractor Co., Peoria 8, Ill.*



Acetylene Generator For Shops (10)

Model A-Twin stationary acetylene generator, for continuous production of acetylene at pressures up to 13 psi, is designed to supply acetylene to points of use within the shop through pipelines without the need for compressors. Refilling the carbide hoppers and water tank are the only manual operations in the virtually automatic process, the maker states. The two carbide hoppers feed alternately. When one is empty the other begins to feed automatically, thus permitting the empty hopper to be refilled without stopping the process. Five sizes are available, with acetylene-producing capacities from 500 to 2,400 cu ft per hr.—*Sight Feed Generator Co., West Alexandria, Ohio.*



Best Buy in Variable Speed!

COMPARE THESE FEATURES of *Vari-Pitch* Automatic sheave with any other variable speed drive and see why *Vari-Pitch* Automatic drive gives you more for your drive dollar.

1. Changes speeds with one hand while machine is running.
2. All mechanism is inside one sheave actuated by movement of the motor base.
3. Ample capacity and safety factor of multiple belts.
4. Full range of sizes from 1 to 40 hp.
5. Top speed is 100% higher than low speed.
6. Quiet operation.
7. Cushioned start.
8. Simple design and easy installation make cost low.
9. Occupies no more space than ordinary sheave.

Vari-Pitch Automatic drive will pay for itself very quickly in increased production, improved quality and more flexible operation on many machines in your plant. Ask your Allis-Chalmers Authorized Dealer or Sales Office representative to give you savings and cost figures on your operations. Or write for bulletin 20B7223.

ALLIS-CHALMERS, 968A SO. 70 ST.
MILWAUKEE, WIS.

Vari-Pitch and *Texrope* are Allis-Chalmers trademarks. A-3064

Sold . . .
Applied . . .
Serviced . . .

by Allis-Chalmers Authorized Dealers, Certified Service Shops and Sales Offices throughout the country.

MOTORS — ½ to 25,000 hp and up. All types.

CONTROL — Manual, magnetic and combination starters; push button stations and components for complete control systems.

PUMPS — Integral motor and coupled types from ½ in. to 72 in. discharge and up.

ALLIS-CHALMERS

Add a BIG *SAFETY* FACTOR to your hoist

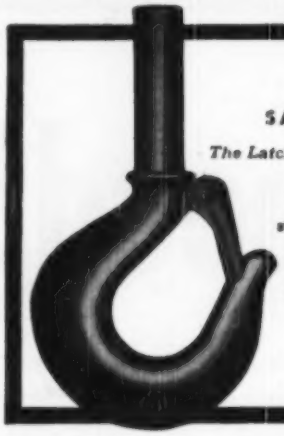
A Laughlin Safety Hook will boost the "safety efficiency" of your hoist many times . . . protecting workers against injury and equipment against damage from accidentally slipping loads.

Make sure your next Hoist is equipped with a LAUGHLIN SAFETY HOOK

Specify "Laughlin Safety Hooks" when ordering new hoists from your distributor. They pay for themselves many times over in accidents avoided.

Play safe — change over your present Hoist Hooks to LAUGHLIN SAFETY HOOKS

Order from your distributor according to the size now on your hoisting equipment . . . or state the capacity of your hoist and he will furnish the correct Laughlin Safety Hook to fit your needs.



LAUGHLIN SAFETY HOOK

The Latch Locks the Load

Drop-forged steel, heat-treated . . . stainless steel spring with pressed steel latch. Cast bronze latch on larger sizes. Available for ½ to 15 ton safe working loads.

Send for Laughlin's famous data book of fittings — ask for Catalog #145. THE THOMAS LAUGHLIN COMPANY, DEPT. 6, PORTLAND 6, MAINE.

***There is a* LAUGHLIN SAFETY HOOK *for every* HOISTING or MATERIALS-HANDLING JOB**

3310
½ to 15 tons

3220
½ to 15 tons

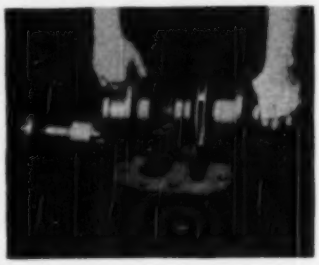
3316
½ and 1 ton

3315
750 pounds

LAUGHLIN

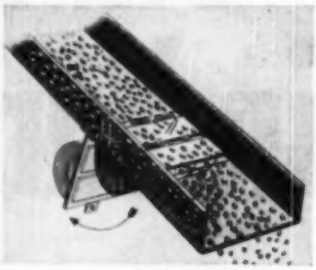
THE MOST COMPLETE LINE OF DROP-FORGED WIRE ROPE AND CHAIN FITTINGS

9 in for use with Types E, A, B, N and PK rods. The bits are hard-faced to eliminate breakage, maintain gage and drill hard and soft formations at maximum efficiency, and may be used where air or water is the circulating medium, the maker states. Catalog 502 available.—*Herb J. Hawthorne, Inc., Box 7366, Houston 8, Tex.*



Service Pumps (12)

New line of De Laval pumps designed for easier maintenance have all wearing parts contained in easily-removed rotor assembly, according to the manufacturer. Worn rotor may be returned to manufacturer through service and exchange plan with credit allowed on new rotor for serviceable parts. Pump design also permits repairs in user's shop. Shaft bearings are lubricated for life and mechanical seals replace stuffing boxes. The pump is built in three sizes for capacities up to 450 gpm against heads up to 230 ft.—*De Laval Steam Turbine Co., Trenton 2, N. J.*



Tramp-Iron Magnet (13)

Non-electric Alnico Perma-Plate magnet, for removing tramp-iron from wet or dry material, can be installed above belt and slat conveyors, and in open or closed wood or metal chutes, troughs, tables, rolls or hammermills. Magnets are not affected by weather or high temperature and magnetic permanence is guaranteed for the life of the installation, the manufacturer states.—*Dings Magnetic Separator Co., Milwaukee 46, Wis.*

WANT Bulletins or More Data on Products Described Here? Just Circle the Numbers and Mail the Card!

GENERAL

COMBINES SAFETY AND STRENGTH, EXTRA TRACTION AND SPEED . . . WITH LONGER WEAR TO GO ANY JOB, ANYWHERE

FASTER! EASIER! AT MORE PROFIT!

The General L. C. M. is built to do most work off-the-road, some on. Massive lugs of rubber dig deep for non-skid traction. Tremendous shoulders resist cuts, scrapes and bruises.

The General H. C. T. does most work on-the-road, some off. Thick, deep, free-rolling ribs give safety, speed and protection against punctures on the long over-the-road hauls.

THE GENERAL L.C.M.

THE GENERAL H.C.T.

In soft, slushy ground the General L. C. M. bites in for extra traction, forward or backward. Broad lugs keep tires on top of soft surfaces.

General H. C. T. rolls safely over the highway to off-the-road delivery points; gives extra traction when you need it most.

Heavy loads require extra strength and stopping-power. The General H. C. T.'s extra deep tread works faster, lasts longer, runs and stops safer.

SPECIFY GENERAL TIRES ON YOUR NEW EQUIPMENT

it's "KNOW HOW" that counts

Yes, it takes "know-how" to help save lives, and reduce the frequency and severity of mining accidents. Bituminous Safety Engineers have that "know-how" . . . they are trained, skilled men who combine laboratory and field work to provide complete mine safety for Bituminous Workmen's Compensation policyholders. Their Safety Engineering Program consists of regular mine inspections . . . analysis of mine hazards . . . survey recommendations . . . accident prevention activities . . . reduction of operating expenses resulting from accidents . . . and establishment of production efficiency.

Bituminous Safety Engineers serve mine owners, operators and workers alike with their Safety Engineering Program.

"Security with Service"

BITUMINOUS CASUALTY CORPORATION
ROCK ISLAND BBC ILLINOIS

Over 30 Years of Service to the Industry

Box-Car Door Opener (14)

One-man car-door opener can open or close a stubborn box-car door in 20 sec or less, with complete safety for user provided by positive-locking safety hooks on both ends, it is stated. Details available.—*The Nolan Co., Bowerston, Ohio.*

Lightweight Drill (15)

New 7½-lb CP-9 drill, designed as an all-purpose maintenance tool, is an air-operated self-rotating unit for installation of utilities. Light weight and good balance make it easy to operate on overhead work or where footing is precarious, according to the manufacturer. Bulletin SP-3016 available.—*Chicago Pneumatic Tool Co., New York* 17.

"FIRST IN THE FIELD"

WEDGE-WIRE Aluminum VIBRATOR SCREENS

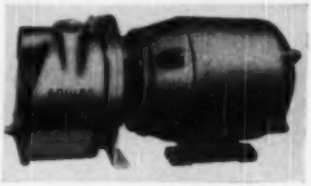
The cross-section above shows how KLEENKLOT screens operate on a non-clogging, non-blinding principle.

Here is a new type of vibrator screen that is receiving acclaim wherever it is used. Like all Wedge Wire Screens, it is precision-made of quality materials and will give long life and perfect performance. WEDGE WIRE Screens will help maintain the efficiency of your preparation plant.

THOROUGHLY TESTED AND PROVEN IN ACTUAL TESTS

SEND FOR COMPLETE LITERATURE & DATA

Wedge-Wire CORPORATION
1807 CLARK AVE. CLEVELAND 2, OHIO



Centrifugal Pumps (16)

New pumps developed for self-priming applications eliminate priming valves, large priming reservoirs and recirculation of water during pumping stage. Efficiencies are comparable to those of standard centrifugal pumps, it is stated. Units available from ¼ to 5 hp, with open or closed impellers. Capacities to 120 gpm and heads to 135 ft, with suction lifts up to 25 ft, are offered. Information available.—*Goulds Pumps, Inc., Seneca Falls, N. Y.*

Burning Torch (17)

Recently introduced Prepo torch, now available through the Air Reduction Sales Co., is said to give an instant heat at 2,200 deg F and permits immediate application of a hot flame for soldering joint, loosening nuts, sweating cable and other operations, with no preheating, pumping or priming required. The lightweight (1½-lb) torch may be used in any position and features a throw-away fuel container, which, in ordinary use, will last for over 4 hr, depending on the size of burner.—*Air Reduction Sales Co., New York* 17.

Equipment Shorts

(18) LABORATORY CRUSHER—New Massco Gy-Roll reduction crusher for laboratory or pilot-plant use is designed to reduce ½-in feed to as fine as 10 mesh in a single pass. The unit features high capacity and low power consumption, and is available

COALMASTER "1046" DRILL BIT CUTS DRILLING TIME AND COST FOR 1⅞" HOLES

1 One piece—solid shank assures longer life.

2 No drill head needed—bit fits directly into socket.

3 Scientific 2-prong spiral design reduces power consumption.

4 Special analysis heat-treated steel cuts faster, retains sharp edge longer.

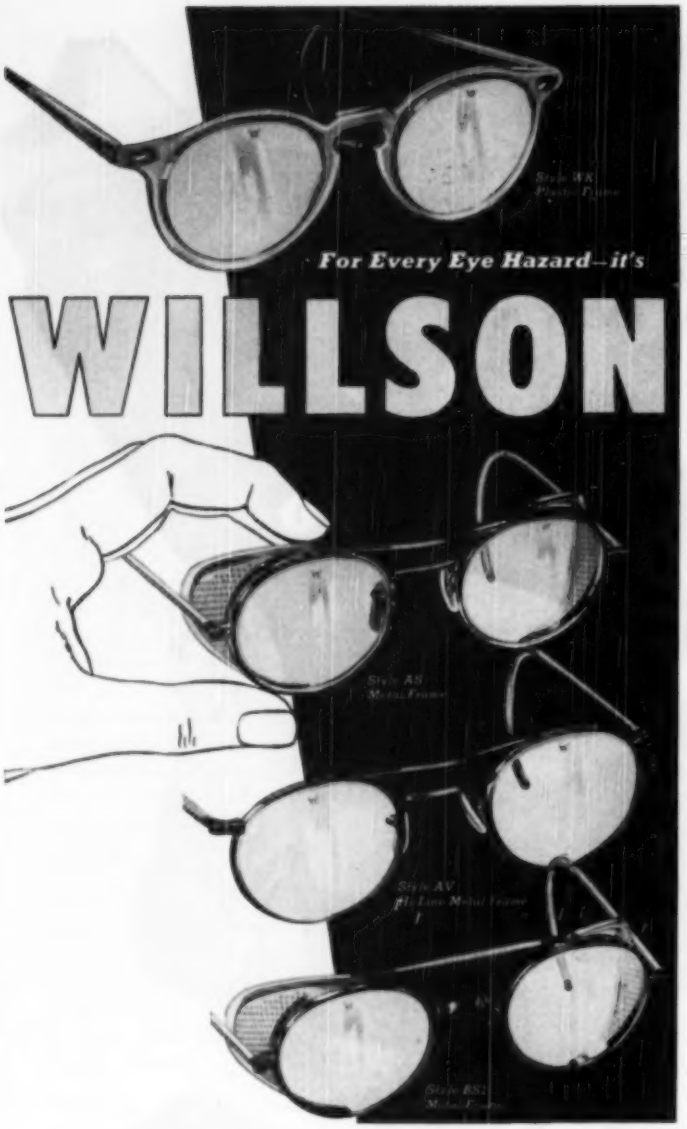
5 Quick-change detachable socket fits directly into Series 0875 Coalmaster Auger.

COALMASTER TOOLS

Save drilling time—reduce your overhead with the new Coalmaster "1046" DRILL BIT. Available through the following distributors:

CENTRAL MINE EQUIPMENT COMPANY
ST. LOUIS 13, MO.

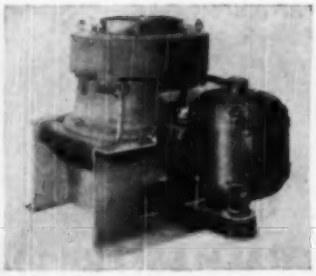
AUSTIN POWDER COMPANY, Cleveland, Ohio • THE BUDA COMPANY, Harvey, Illinois • DIAMOND SUPPLY COMPANY, INC., Evansville, Indiana • DOOLEY BROTHERS, Peoria, Illinois • DRILLMASTER SUPPLY CO., Evansville, Indiana • ILLINOIS POWDER MFG. CO., St. Louis, Missouri; Salt Lake City, Utah • JOY MFG. CO., Main Office: Pittsburgh, Pa.; Subsidiaries and Representatives in 57 Countries • MOBILE DRILLING, INC., Indianapolis, Indiana • SALEM TOOL COMPANY, Salem, Ohio.



WILLSON®
Dependable Products Since 1870
*T.M. Reg. U.S. Pat. Off.

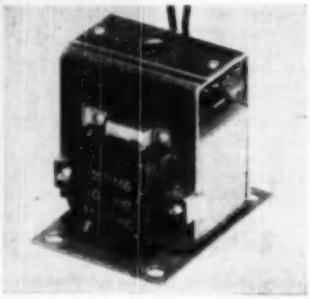
Protection • Comfort • Appearance

. . . only the most complete line of safety spectacles with Super-Tough* lenses gives you *all three* in metal or plastic frames. You'll find WILLSON safety spectacles an ideal combination of strength, comfort and good looks. And you need *all three* to get full cooperation from workers who must wear eye protection. See our new catalog for complete information. Get it from our nearest distributor, or write direct to WILLSON PRODUCTS, INC., 239 Washington St., Reading, Pennsylvania.



in 6- and 10-in units, requiring ½ and 1 hp, respectively. Bulletin available.—*Mine & Smelter Supply Co., Denver* 17.

(19) SPEED REDUCERS—Single- and double - reduction industrial speed reducers, in ratings up to approximately 3,000 hp, have taper-hardened gearing and pinion shafts and fabricated steel housings to permit use of units requiring minimum mounting space. Weight savings also are effected. Standard AGMA hobbed double-helical type with a high helix angle provides smoother operation, less vibration at higher speeds and eliminates thrust against case and bearings, the manufacturer declares. The units also feature antifriction bearings throughout and splash lubrication.—*Westinghouse Electric Corp., Box 2099, Pittsburgh 30, Pa.*

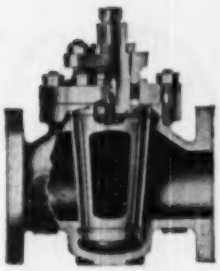


(20) HEAVY-DUTY SOLENOID—New solenoid, for heavy-duty industrial applications requiring a push-type solenoid with a maximum stroke that does not exceed 5/16 in, features cast permafil coil assembly said to be moisture-, oil-, shock- and vibration-resistant. The coil can be changed with a minimum of difficulty by removing two bolts to permit the backstop and plunger to slip off.—*General Electric Co., Schenectady 5, N. Y.*

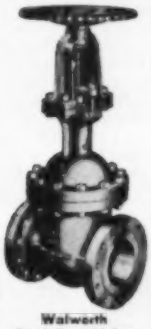
(21) PLASTIC INSULATION—Rulan, a flame-retardant plastic, has a power factor over a wide range of frequencies of 0.002, compared with 0.0002 for polythene, the manufacturer declares. Its dielectric constant compares with that of polythene as 2.7 to 2.5. The new plastic insulation is non-cracking and retains its electrical properties after immersion in water for long periods at elevated temperatures.—*E. I. du Pont De Nemours & Co., Wilmington 98, Del.*

• VALVES

• PIPE FITTINGS



Walworth
Lubricated Plug Valve



Walworth
Steel Gate Valve

Walworth
Iron Body Gate Valve

Walworth
"500 Brinell" Bronze Globe Valve

Walworth
Iron Body Saddle Gate Valve

Walworth
Cast Steel Flanged Fittings

Walworth manufactures a *complete line* of valves and pipe fittings: all made to the highest standards of quality, both as to dimensional accuracy and metallurgical properties. In design, construction, and performance, Walworth products reflect more than a century of experience in the manufacture of quality valves and fittings.

Your Walworth distributor will give you full information on the *complete line* of Walworth steel, iron, and bronze, and special alloy valves and pipe fittings; also Walworth Lubricated Plug Valves, and Walseal* valves, fittings and flanges. Ask for this information today.

*Patented—Reg. U. S. Pat. Off.

WALWORTH

valves and fittings

60 EAST 42nd STREET, NEW YORK 17, N. Y.

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD

Doze

in your armchair...

Direct lift and positive down-pressure are two of many features of the engine-mounted twin cylinder design in the new Baker HD-5 blades.

The open design of the mounting brackets on either side of the engine frame makes your tractor engine easily accessible for inspection and adjustment.

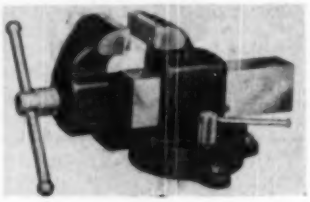
With a new *engine-mounted* BAKER Bulldozer or Grade-builder on your ALLIS-CHALMERS HD-5 Tractor, driver fatigue—and resulting loss in accuracy and production—is reduced to a new low.

The operator can control the blade with his forearm resting on the seat arm. The control valve is equipped with ball bearings—needs only *finger-tip* effort to shift. And due to the exclusive BAKER valve system, you can count on your blade to *hold* in any position.

For the complete story on how BAKER blades can help you do more work and better work on every shift, see your Baker-Allis-Chalmers Dealer or write direct. THE BAKER MANUFACTURING COMPANY, Springfield, Illinois.

P.S.: Baker is the PIONEER and the SPECIALIST in bulldozers

(22) EMERGENCY LIGHT—Designed to provide a reliable source of light in the event of power failure, new Emergi-Lite contains a 6-v battery charged from the lighting circuit line while power is on and discharging through a sealed-beam lamp when the power fails. The lamp will remain lighted for approximately 9 hr, according to the maker. The 8x9½x10-in unit has an 8-ft-long extension cord for plugging into a 115-v single-phase line, either 25 or 60 cycles. Bulletin available.—*Alliance Electric Works Ltd., Montreal 8, P. Q.*



(23) QUICK-ACTING VISE—New, quick-acting machinist's vise is stated to be built on a new principle and to embody a patented fast-slip action. This Dodge Slide-Set vise, the manufacturer says, opens or closes to any position in 1 sec through a push-pull action that eliminates spinning the handle. It weighs 58 lb and combines the strength and full power of a conventional-type vise with an instant slide action that is said to be simple, fast and positive. A turn and a half of the handle counter-clockwise permits sliding in "neutral" to any position. From the moment the work is engaged, the vise operates in the conventional manner. A specially designed no-pinch handle protects the operator against blood blisters between thumb and forefinger. The vise is provided with either a swivel or stationary base and is built in one size only: 4 in. Each vise is individually packaged.—*Dodge Mfg. Corp., Mishawaka, Ind.*

(24) DRAGLINE CHAIN—Cast of Fibraloy steel, new bucket chain provides longer wear within the working capacity of the chain and permits use of 10% lighter lengths when new. Extra toughness at high hardness levels provides high resistance to shock and abrasion, according to the manufacturer. Fibraloy resists plas-

HERE IT IS IN ONE BOOK

for the FIRST TIME in mining history

Hazard's New 72-page Mining Book Gives you Everything you need to Select the Right Electrical Wire, Cable, and Cord for Each Specific Mining Need.

You will find information on:

- cables for various applications, with illustrated index
- cables and suspension methods for borehole and shaft installations . . .
- portable cords and cables that will withstand pulling, twisting, bending and dragging along the mine floors and run-overs by mining equipment . . .
- "permissible" cords and cables with the highest degree of flame-resistance as required by the Pennsylvania Dept. of Mines and U. S. Bureau of Mines . . .
- cable dimensions and characteristics for all types of application . . .

For over a year the combined engineering and research staffs of Okonite and Hazard have been compiling this new book on mining cable so you can have a *handy, complete, technically accurate* information source about electrical wire and cable for every mining requirement.

It contains full tabular specifications, detailed engineering data, uses and applications, types of construction, methods of installation and splicing . . . on borehole and shaft cable, power distribution cable, all types of flexible cords and portable cables, shot-firing cable, remote control and drill cord.

With the constantly increasing electrification of mines, your electric cable problems become more complex than ever. Information contained in this new Mining Book will help solve your problems. If you don't already have your copy of this comprehensive, helpful book on HAZARD MINING CABLES, fill in this coupon today! Hazard Insulated Wire Works, Division of The Okonite Company, Wilkes-Barre, Pa.

HAZARD Insulated Wire Works
Wilkes-Barre, Pa. Date_____

Gentlemen:

Please send my copy of the new HAZARD MINING CABLE BOOK.

NAME_____ TITLE_____

COMPANY_____

ADDRESS_____

CITY_____ STATE_____

8495

HAZARD insulated wires and cables for every mining use

8 YEARS of OPERATION . . . NO REPAIRS

(except renewing screen cloth)

A Deister Vibrating Screen handles run-of-the-mine coal at this preparation plant of The Steubenville Coal and Mining Company, Steubenville, O.

"The best we ever used."

That's how John J. Sherrard, president of The Steubenville Coal and Mining Company, Steubenville, Ohio, describes the two-deck, 5' x 10' Deister Vibrating Screen which handles 100 tons of run-of-the-mine coal every hour at the company's mine.

This Deister Vibrating Screen has operated since 1942 with an excellent service and maintenance record. In fact, Mr. Sherrard comments, "the only repair necessary has been renewing the screen cloth."

Deister Vibrating Screens make possible faster, more accurate grading. The sturdy, all-welded construction minimizes downtime. The supporting structure of Deister Vibrating Screens is protected from vibration by full cushioning. Like Mr. Sherrard, you will find the Deister Vibrating Screen the best you have ever used. Write for full information.

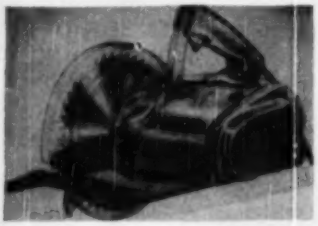
DEISTER SCREENS

DEISTER MACHINE CO.

FORT WAYNE 4, INDIANA

tic deformation and therefore does not thin out under overloads.—*Baer Steel Products, Inc., Auburn, Wash.*

(25) ELECTRIC LUBRICATING GUN—New Lubrigun, Model 249, is designed for fast efficient lubrication of industrial machinery requiring high-pressure application of medium- and heavy-grade lubricants that will not readily seek their own level. Bulletin 662 available.—*Lincoln Engineering Co., St. Louis 20, Mo.*



(26) PORTABLE ELECTRIC SAW—New 19-lb unit, with 1½-hp universal motor drive, cuts up to 2 11/16 in with 8½-in blade. Dual V-belt drive from motor shaft to saw arbor shaft eliminates gears, gear-grease leakage and high gear maintenance, according to the maker. V-belts also cushion motor from shock and overload. The saw is equipped with an adjustable base for bevel cuts from 90 to 45 deg. Catalog available—*Syntron Co., Homer City, Pa.*

(27) OIL-SERVICE CONVEYOR BELTS—Oil-Resisting and SuperOil-proof belts have been added to the B. F. Goodrich line. The former is recommended for handling oil-treated coal and other materials with light oil characteristics, while the latter is recommended for conveying pine oil, machine cutting oils, asphalt compositions and other use where oil and high heat are combined.—*B. F. Goodrich Co., Akron, Ohio.*

(28) OFF-THE-ROAD TIRE—A new Universal tire especially designed for front wheel use and easier steering features a ribbed tread engineered for this purpose, the maker declares. Construction of the tire is the same as the conventional Universal. The tire is available in three popular sizes: 12:00x24, 16 ply; 13:00x24, 18 ply; and 14:00x24, 20 ply.—*B. F. Goodrich Co., Akron, Ohio.*

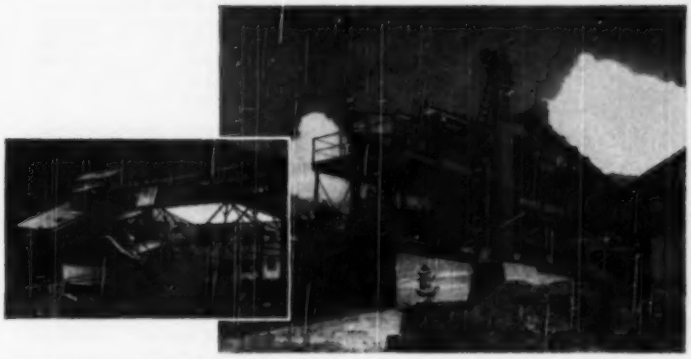
(29) VERTICAL TURBINE PUMPS—A new line of turbine pumps features capacities from 50 to 15,000 gpm. Either oil- or water-lubricated pumps, arranged for motor drive, right-angle gear drive or belt drive, are suitable for service in sumps, tanks, reservoirs or streams. Overlapping of sizes permits selection of a unit that will operate a peak efficiency for nearly any capacity at any head, up to maximum ratings.—*Worthington Pump & Machinery Corp., Harrison, N. J.*

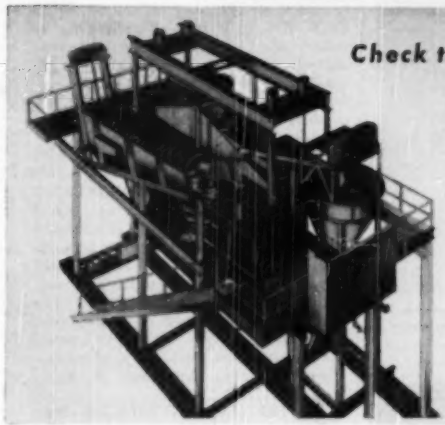
Clean Coal Sells!

More and more **cost conscious, profit conscious** operators are turning to WEMCO MOBIL-MILLS to meet today's competitive market. Clean coal of accurately controlled quality and grade assures a ready market at top prices.

GET CLEAN COAL WITH

WEMCO MOBIL-MILLS





Check these

MOBIL-MILL FEATURES

- ✓ Prefabricated
- ✓ Low initial cost
- ✓ Low operating costs
- ✓ Clean, sharp separations
- ✓ Installed for you

The WEMCO MOBIL-MILL gives you the flexibility of process, the accurate control and the cleaning efficiency necessary to produce clean, saleable coal of any desired grade. Employing the proven heavy media process, the Mobil-Mill offers outstanding advantages that mean greater profits in coal cleaning:

- Adaptability to any desired grade of product
- High coal recovery: recoveries from your refuse pile probably would buy a Mobil-Mill in less than one year
- Separations at any desired specific gravity from 1.25 to 2.50
- Control of separating gravity within ±.01, changeable in minutes or capable of being sustained for days

MOBIL-MILLS are available in several sizes to wash from 25 to 420 TPH, with cone or drum type separators to handle sizes from 3/32" to 8".

Write today for full information.

PRINCIPAL OFFICES
San Francisco • Sacramento • Salt Lake City • Spokane
Pocatello, Idaho • Denver • Phoenix • Tucson • Chicago
Hibbing, Minnesota • Bartow, Florida • New York

EXPORT DISTRIBUTORS
The Ore and Chemical Co.
80 Broad Street • New York 4, N. Y.
Continental Europe and North Africa
Dr. Ing. Herbert Lichtfett, A. B, Stockholm 3, Sweden
S. E. M. U. Paris, France
Ferdinand Egeberg & Company, Oslo, Norway
Midac, Milan, Italy
A. Schuhardt & Company, Basle, Switzerland
G. Mathiolakis & Co., Athens, Greece
Agence Maritime & Maritime, S. A., Antwerp, Belgium
Adil Gubay & Albert Kyanku, Istanbul, Turkey
Fraser & Chalmers (S. A.) Ltd., Johannesburg, South Africa

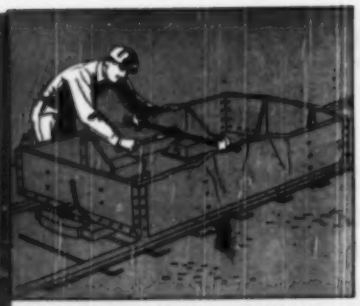
WEMCO
WESTERN MACHINERY COMPANY
760-766 FOLSOM STREET · SAN FRANCISCO 7, CALIFORNIA

WKE (HMS) Mobil-Mill • Coal Spiral • Standard Thickeners (HMS) Thickeners • (HMS) Media Pumps • Hydroseparators (HMS) Densifiers • (HMS) Separatory Cones • "SH" Classifiers Sand Pumps • Conditioners and Agitators • Fagergren Flotation Machines • Dewatering Spirals • (HMS) Laboratory Units

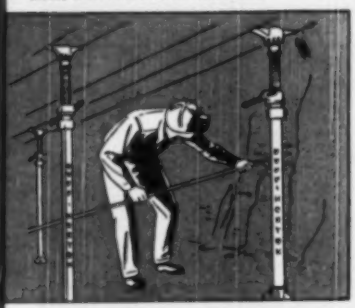
for SAFE—
FAST—
DEPENDABLE
JACKING
OF MINE
EQUIPMENT

DUFF-NORTON
JACKS

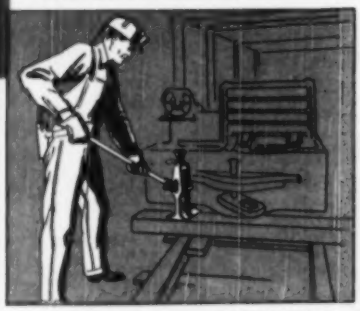
No.
516-MT
Automatic
Lowering
Jack



Push and Pull Jack used for straightening sides, ends and sills of mine cars.



Mine Roof Jacks support mine roofs, cross timbering and protect working face areas.



Illustrated is a five ton automatic lowering jack recalling a mine car. Convenient and economical.

Duff-Norton Mine Jacks, available in a wide variety of styles and capacities, meet exacting requirements for every lifting, lowering, pushing or pulling job in and around your mine. These jacks more than pay for themselves in a short time with savings in time, effort, labor and money.

Write today for your copy of this new "Handy Guide" for selecting

MINE JACKS

See Your Industrial Distributor.

THE **DUFF-NORTON** MANUFACTURING CO.

MAIN PLANT and GENERAL OFFICES, PITTSBURGH 30, PA.—CANADIAN PLANT, TORONTO, ONT.

"The House that Jacks Built"

65 New Products . . .

OR CATALOGS are described in this month's New Equipment section starting on p 112. Have you checked through them—or are you missing a good bet that may help you jack output and cut operating costs?

(30) KNEE PADS—New Safe-Nee pads have no binding straps or rubber bands to be fastened around leg, the manufacturer states. A thermoplastic-backed cloth with four snap fasteners is pressed onto the knee of work pants with a hot iron, and then a 6x4½x⅝-in sponge-rubber pad can be snapped onto the base cloth. Cloth adheres permanently to trousers and withstands repeated laundering.—*Safe-Nee Co., Brooklyn 5, N. Y.*

(31)—ROOF BOLTS—Hubbard mine-roof anchor bolts utilize a pair of interlocked wedges driven up over the tapered end of the bolt to grip the strata in the sides of the hole. An installing tool, when forced against the wedges by the nut, pushes the wedges up the taper on the bolt, thus forcing the wedge teeth into the sides of the hole. The installing tool is then removed and a roof plate installed. Bulletin available.—*Hubbard & Co., Pittsburgh 1, Pa.*

(32) FIRE HOSE—Blazeguard, a rubber-lined cotton fire hose, is designed to occupy 30% less space in wall racks or trucks while gaining in tensile strength and durability, according to the manufacturer.—*Approved Equipment Mfg. Co., New Milford, N. J.*

(33) CORROSION-RESISTANT COATING—Corrosite, a new liquid plastic paint, bonds to metal surfaces to prevent corrosion and provide acid-resistance. It does not crack or peel and becomes harder with age, according to the manufacturer. The coating may be used on wood, concrete and other porous or semi-porous surfaces without a primer.—*Corrosite Corp., New York, N. Y.*

(34) FIRE EXTINGUISHERS—New stainless-steel 2½-gal fire extinguishers are twice as strong and 50% lighter without the charge than copper units, it is stated. Three models are available: a Foamite unit for Class A and B fires; a chemical solution (soda-acid) for Class A fires; and a plain-water type with CO_2 discharge, also for Class A fires. Bulletin.—*American-LaFrance-Foamite Corp., Elmira, N. Y.*

(35) ANEROID BAROMETER—Micro barometer, accurate to 1/1,000 in of mercury, gives instantaneous readings without necessity for temperature or latitude corrections, the maker states. Range of the instrument (Model PMB-1) is from 24.8 to 31.0

in of mercury, with other ranges available.—*American Paulin System, Los Angeles, Calif.*

(36) STANDARDIZED CARBON BRUSHES—New plan of standardizing carbon brushes is said to permit a better product at a better selling price and simplifies handling and storage. Including many of the most-used items in the National Carbon line, "Standard Brushes" are packed in standard packages and sell at the same price per brush if purchased in standard packages or multiples.—*National Carbon Div., Union Carbide & Carbon Corp., New York* 17.

(37) NEW CLEANING SOLUTION for personal safety equipment, such as goggles, respirators and helmets, is said to combine the best properties of both a germicide and detergent, and removes dirt and deposited skin oils without inducing corrosion, staining or deterioration of rubber, plastic or metal parts. This No. 101 Germicidal Detergent may be used as a spray, swab or immersion solution.—*American Optical Co., Southbridge, Mass.*

(38) FIRE EXTINGUISHERS—Greater safety is reported with the Stop-Fire SA-50-500 soda-acid and FM-51-500 foam 2½-gal fire extinguishers. Features include the "Safety Port" removable discharge elbow to permit easy inspection for clogging, a 500-lb-test seamless shell drawn from single-piece fine brass and a new type government-specification bottle cage. Bulletin available. *Stop-Fire, Inc., Brooklyn* 1, *N. Y.*

(39) FIRE-HOSE COUPLINGS—New complete line of Le-Hi fire-hose couplings and coupling accessories includes, among others, the new Gliderlug couplings with rounded lugs that glide over curbs, ladder rungs, stairs and other obstructions. Bulletin 7 available.—*Hose Accessories Co., Philadelphia* 22.

(40) BALL-BEARING FLANGE UNIT, known as the "FED Series" and featuring a streamlined all-metal two-bolt-style housing, is designed specifically to meet the requirements of small-shaft equipment where light loads and normal speeds are imposed. A headless set screw locks the unit to the shaft and a standard grease fitting is provided for supplementary lubrication. Bulletin 7149 available.—*Albery Bearing Co., Chicago* 32.

(41) ELECTRIC SAW—New low-priced 6-in Thor portable electric saw is said to offer the same heavy-duty construction and exclusive features included in the larger higher-priced models previously released in the company's new "Silver Line." Bulletin JE-1280 available.—*Independent Pneumatic Tool Co., Aurora, Ill.*

YES—I would like more information . . .

Please send me catalogs or further information about the items from the Equipment News Section whose numbers are circled. (Sept., 1950)

1	6	11	16	21	26	31	36	41	46	51	56	61
2	7	12	17	22	27	32	37	42	47	52	57	62
3	8	13	18	23	28	33	38	43	48	53	58	63
4	9	14	19	24	29	34	39	44	49	54	59	64
5	10	15	20	25	30	35	40	45	50	55	60	65

Also please send me more information on these products advertised in this issue (give name and page number).....

.....

My Name..... Position.....

Company .....

Address .....

(Good only if mailed before Nov. 1, 1950)

USE THIS CONVENIENT CARD

. . . TO GET MORE INFORMATION on products and bulletins mentioned in this Equipment News Section or for data on any product advertised in this issue. Circle item numbers, tear out and mail.

EQUIPMENT BULLETINS — Use Postage-Free Card Above To Add These Helpful Catalogs to Your Working File

(42) FROTH-FLOTATION UNITS—Bulletin FF501, issued by Wilmot Engineering Co., Wilkes-Barre, Pa., contains installation records of its new separation machine, which features concentration of all operations in one unit, for savings in floor space, operating time, power and labor costs.

(43) BELT CONVEYORS—Bulletin LD-100, available from Joy Mfg. Co., Pittsburgh 22, Pa., describes its complete line of belt conveyors for the mining industry, including Models MB, MTB, and C conveyors. The booklet has 28 p of photos and dimension prints, showing the various drives, tail sections, take-ups and intermediates sections available. Complete specifications for each and the Joy line of belt-conveyor accessories are covered.

(44) DEEP-WELL TURBINE PUMPS—Deming Co., Salem, Ohio, has issued Bulletin 4700, a 20-p booklet showing construction details, various types of drives and typical installations of its deep-well Turbine pumps available with inside diameters of 4 in or larger and with capacities varying from 12 to 3,000 gpm.

(45) VARIABLE SPEED DRIVES—Link-Belt P.I.V. variable speed drives, available in eight sizes and 16 types from ⅛ to 25 hp and with manual and automatic controls, are illustrated, listed and described in a new 32-p Book 2274 published by Link-Belt Co., Chicago 1. A special feature of the booklet is the convenience with which a P.I.V. of the right specifications for specific services may be selected directly from the 32-p section of "Preselected Drives." Diagrams of automatic speed-control and photos of typical installations are included.

(46) POWER SHOVELS AND CRANES—Separate bulletins from the Thew Shovel Co., Lorain, Ohio, cover the new Lorain-50 Series in the 1-yd class and the Lorain TL-Series in the ½- and ¾-yd classes. The units are featured in a variety of mountings and attachments.

(47) MOTIVE-POWER BATTERIES—Gould Storage Battery Co., Trenton 7, N. J., offers six new data sheets designed to help specification engineers and others to select the correct motive-power batteries for mine locomotives, shuttle cars and industrial trucks. The sheets cover six rubber-jar batteries ranging from 136 to 680 amp-hr to 400 to 1,500 amp-hr at the 6-hr rate.

(48) COAL-PREPARATION ENGINEERING, CONSTRUCTION AND MACHINERY—Booklet, "Still Seeking and Solving Tough Engineering Problems," issued by Roberts & Schaefer Co., Chicago 6, outlines the company's facilities for engineering, construction and manufacturing and its growth over the past 50 yr. The booklet is thoroughly illustrated with

FIRST CLASS
PERMIT No. 64
(Sec. 34.9, P.L.&R.)
NEW YORK, N. Y.

BUSINESS REPLY CARD
No Postage Stamp Necessary If Mailed in the United States

Postage Will Be Paid By—

McGRAW-HILL PUBLISHING CO., INC.
THE EDITOR, COAL AGE
330 WEST 42nd STREET
NEW YORK 18, N. Y.

USE THIS CARD

. . . TO GET MORE INFORMATION on products and bulletins mentioned in this Equipment News Section or for data on any product advertised in this issue. Circle item numbers, tear out and mail. NO STAMP NEEDED.

EQUIPMENT BULLETINS AVAILABLE—Con't.

photos of many recent plants designed and built by the company.

(49) MINING MACHINERY AND EQUIPMENT—Booklet 832, "What We Make," issued by Jeffrey Mfg. Co., Columbus 16, Ohio, illustrates and briefly describes the complete line of products manufactured by Jeffrey and its associated companies. Plant and research facilities, branch offices and other information are covered.

(50) SPEED REDUCERS—Bulletin G-WBV on the new IMO-DeLaval worm-gear speed reducer covers all the latest revised AGMA horsepower ratings, with details of construction and types available and includes selection tables, horsepower ratings, load-rating and dimension tables. The 32-p booklet is available from DeLaval Steam Turbine Co., Trenton 2, N. J.

(51) BREATHING - APPARATUS TELEPHONE—Bulletin B-21 from Mine Safety Appliances Co., Pittsburgh 8, illustrates and describes the operation and application of the new MSA Maskfone, which provides direct telephone contact between wearers of gas masks or breathing apparatus over either short or long distances. The unit is powered by the speaker's voice and requires no batteries or other external power source.

(52) CENTRIFUGAL PUMPS—Bulletin 50 from Rice Pump & Machine Co., Milwaukee 15, Wis., covers its line of 2- and 3-in 7M, 10M and 15M self-priming centrifugal pumps powered by lightweight air-cooled gasoline engines. The units also are available with pulleys for belt drives and with flexible couplings for direct-connected electric-motor drives.

(53) HIGH - VOLTAGE CABLE—Booklet 19-150 from General Electric's Construction Materials Dept., Bridgeport 2, Conn., entitled "Super Coronol-Geoprene Power Cable for Circuits up to and including 15,000 V," contains charts and tables on physical and electrical properties, splicing and terminating instructions, specification data and application recommendations. The cable is recommended for high-voltage transmission and distribution systems for station and apparatus circuits, mine-power circuits, aerial or underground systems, etc.

(54) CRAWLER TRACTORS—International Harvester Co., Chicago 2. Catalogs A-153-NN and A-154-NN describe features of new TD14A and TD18A tractors, with sectional views, photographs and other information.

(55) STORAGE BATTERIES—KW Battery Co., Chicago, Ill. New catalog describes complete line of storage batteries, giving capacities, uses and specifications for mine-locomotive, industrial-truck, lighting, marine and air-conditioning applications. Care and maintenance information, terminal-connection data and recommended charging practices are included.

(56) RUST PREVENTION—Rust-Oleum Corp., Evanston, Ill. Industrial rust-prevention directions relate to uses under general exposure and other special conditions which produce rust, for machinery and implement finishes, heat- and chemical-resistant coatings and floor coverings. The catalog includes about 36 different applications for the company's products, with specifications, resistance qualities, drying times and methods of application.

(57) RECONDITIONING CARBIDE BITS—Rock Bit Sales & Service Co., Philadelphia 25. A 20-p picture story shows how to recondition tungsten-carbide bits, with suggestions on how to obtain maximum speed and footage.

(58) STEEL SELECTION GUIDE—Joseph T. Ryerson & Son, Inc., Box 8000-A, Chicago 80. "Guide to Steel Selection," a 4-p bulletin, lists all popular grades of hot-rolled and cold-finished carbon and alloy steel bars, giving principal characteristics, mechanical properties and uses. Prepared especially for maintenance men and designers.

(59) PORTABLE AIR COMPRESSORS—Davey Compressor Co., Kent, Ohio. Technical Data Bulletin-and-Catalog E-235 lists complete specifications for three 315-cfm two-stage compressors, and summarizes outstanding mechanical features of low-height units especially adapted to roof bolting.

(60) PROTECTIVE COATINGS—Speco, Inc., Cleveland 9, Ohio. Bulletin 1002-B describes rust-, heat-, and chemical-resistant paints and wood-preserving paints, giving uses and methods of application.

(61) HEATING UNITS—Motor-stoker Division, Hershey Machine & Foundry Co., Manheim, Pa. Two 4-p folders and single sheet describe coal-fired boiler, warm-air and conversion stokers developed to burn small sizes of anthracite. Complete specifications and reference data included.

(62) ELECTRICAL EQUIPMENT—Electric Products Co., Cleveland 12, Ohio. Bulletin 2-200 describes complete line of motors, generators, battery chargers, frequency changers and control units for general industrial applications.

(63) SHOVEL - LOADER—Eimco Corp., Salt Lake City 8, Utah. Applications and specifications of Eimco 104 RockerShovel are given in Bulletin 1021.

(64) STRIPPING EQUIPMENT—Caterpillar Tractor Co., Peoria 8, Ill. A 12-p booklet describes stripping applications of tractors, scrapers, Hyst-away dragline and Traxcavator. An 8-p booklet describes features of Caterpillar diesel engines and gives performance examples.

(65) FACTORY-PACKAGED ROLLER CHAIN AND PARTS—Bulletin F-57-50 from the Morse Chain Co., Div. of Borge-Warner Corp., Detroit 8, gives detailed information on its complete packaging of roller chain and parts, a new program designed to simplify handling and storage for the user. All available standard packaged quantities are listed, together with package weights and list prices.

we'll take the "Red Ink" out of your motor repair shop

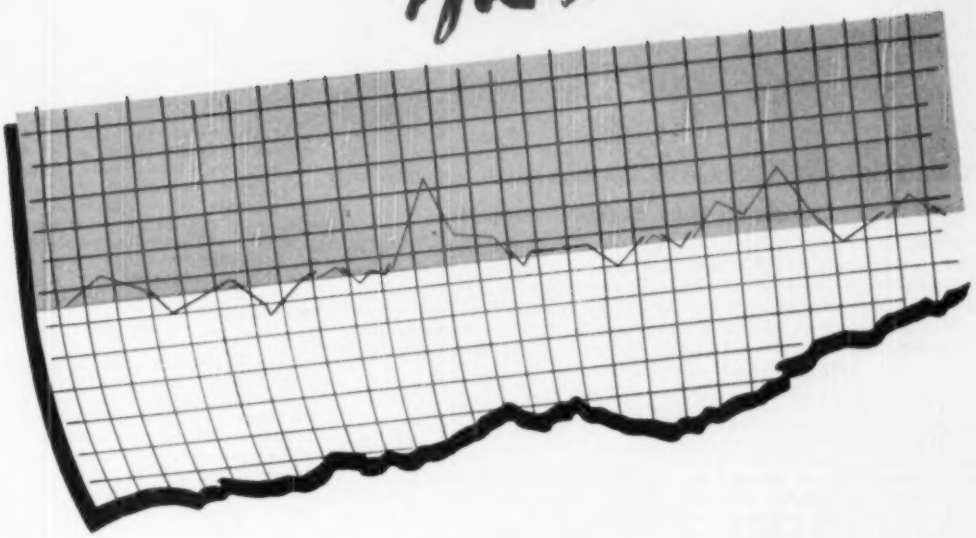


Chart the week-to-week demand and the week-to-week costs of your mine's motor maintenance-repair shop and you'll find that the red ink is concentrated at the periods of peak demand. Normally, the shop probably operates efficiently. But the peak demands cost overtime, and rushed, slighted work. To overcome that condition you'd have to over-equip and over-man your shop. And that means higher cost every day. Many mine operators, on the other hand, are operating such shops with very high efficiency. They are equipped and manned to handle the normal demand; they turn over the peaks — the red ink jobs — to us. Thus they avoid the vicious circle of excessive labor costs and excessive overhead. They get work, too, comparable to the best they can do themselves. We've done so much mine motor and generator work we know how; we're efficient; our costs are low. That means *your* costs are low, both in your shop and in ours. Our engineers will be glad to come to your office to suggest experienced ways and means of taking the top costs out of *your* motor and generator work. Just drop us a line.

NATIONAL ELECTRIC COIL COMPANY

COLUMBUS 16, OHIO, U. S. A.

Among the Manufacturers

GE Completes New Research Project

UNDER CONSTRUCTION since 1946, General Electric research laboratory recently completed near Schenectady, N. Y., has 185,000 sq ft of usable floor space for chemical laboratories and pilot plant, low-temperature laboratory, various shops, executive offices, modern auditorium seating 325, cafeteria and other facilities. Main building shown above is one of five in which the company's industrial research activities are to be concentrated. Movement of personnel and equipment was expected to be completed by the end of August, Dr. C. G. Suits, vice president and director of research, reported.

M. W. Sledge has been named to replace the late E. W. Stephens as manager of the belt-sales department of the Goodyear Tire & Rubber Co., Akron, Ohio. Mr. Sledge, who formerly was assistant manager, will direct all belt-sales activities and will work closely with C. P. Smith, newly appointed chief project engineer, on large belt-conveyor projects. H. R. Harrington, former senior staffman, has been appointed assistant manager of the department and J. L. Thornton, senior sales engineer, has become manager of the belt-sales coal division. A. B. "Dutch" Walter continues as chief engineer of the coal-mine division.

Edgar F. Charlton, formerly with National Tube Co., Pittsburgh, Pa., has been named sales engineer of the Connellsville Mfg. & Mine Supply Co., Connellsville, Pa. A graduate of Carnegie Institute of Technology, Mr. Charlton served 5 yr with the U. S. Air Force during World War II, and now holds the rank of colonel in the Air Force Reserve.

The Gorman-Rupp Co., Mansfield, Ohio, has appointed Edward M. Smith hydraulic engineer and Horace M. Montgomery project engineer for a new department specializing in the development of small centrifugal pumps. Mr. Smith was formerly chief engineer of the pump division, Barnes Mfg. Co., and Mr. Montgomery was new-products engineer for the same company.

Koehring Co., Milwaukee, Wis., announces the following personnel changes: R. E. Bansemer, formerly district sales representative, appointed assistant general sales manager, succeeding J. E. Chadwick; R. K. Patterson, new district representative in the New England area; C. B. Walker, Pacific Northwest; and A. W. Schlosser, southeastern states, working out of Atlanta, Ga.

Jeffrey Mfg. Co., Columbus, Ohio, announces the removal of its district office in West Virginia from Huntington to 403 City Ave., Beckley. E. H. Hebden is district manager. Mining service stations will remain at Logan, Welch and Cabin Creek, as well as at Beckley. The company's Cleveland office now is located at 1560 Hanna Bldg.

Edward V. Melsha, formerly executive vice president, has been elected president of Vulcan Iron Works, Wilkes-Barre, Pa. Other officers elected are: J. A. Roberts, chairman of the board; Harold R. Pittman, secretary-treasurer and W. Emory Wood, assistant secretary-treasurer.

Henry J. Vines has succeeded his brother, Fred D. Vines, resigned, as central sales manager of Bucyrus-Erie Co., with headquarters in Chicago. Most recently, the new sales manager was attached to the company's eastern sales office in New York as New England representative.

Nils Walter Swenson has been appointed assistant manager of branch sales for the mechanical-goods division, United States Rubber Co. Mr. Swenson was formerly manager of mechanical-goods sales in the company's Buffalo, N. Y., branch, and will have new headquarters in Rockefeller Center, New York City.

Richard H. Frizzell has been named sales manager of the structural-products department of the Wickwire Spencer Steel Div. of The Colorado Fuel & Iron Corp. Mr. Frizzell joined Wickwire Spencer in 1933 prior to the merger with C. F. & I., and succeeds G. L. Crawford, who will give full time to his duties as sales manager of the company's Buffalo district.

Whiting Corp., Harvey, Ill., announces a new distributing policy for its products which include electric chain hoists, package and bulk-material conveyor systems, monorail and light crane systems and hoist cranes, in addition to its regular line of materials-handling equipment. Distributors are being selected from among industrial distributors, hardware wholesalers and automotive equipment jobbers.

General Electric has appointed Thorn L. Mayes manager of the Lynn, Mass., engineering division of the company's small- and medium-motor divisions. Mr. Mayes has served in various capacities with the company since his graduation from the University of California in 1927. John J. Miller has been appointed manager of the industrial division of GE's apparatus department, St. Louis, Mo. Mr. Miller joined the company in 1937 after his graduation from the University of Kansas. H. W. Gouldthorpe has been appointed manager, and J. H. Gauss sales manager, of the company's transportation divisions. Messrs. Gouldthorpe and Gauss have transferred from Erie, Pa., to Schenectady, N. Y. Jack Hause, Erie, has been named manager of the transportation division with headquarters at St. Louis.

Westinghouse Electric Corp., Pittsburgh, Pa., has appointed Louis R. Botsai manager of the motor and control division, Buffalo, N. Y. A veteran of 35 yr with Westinghouse, Mr. Botsai has been manager of the company's gearing division in Pittsburgh since 1941. Mr. Botsai succeeds Leon R. Ludwig, who has been appointed to the staff of J. K. Hodnette, vice president. George M. McBride, manager of sales for the gearing division since 1942, has been named to succeed Mr. Botsai.

Western Machinery Co., San Francisco, Calif., announces the opening of a mineral-testing laboratory serving coal preparation as well as other ma-

Huge *one piece* BWH Belt

DESIGNED TO CUT WASTE LINES!

When BWH engineers were called on to produce a fast, power-saving, economical belt for a coal mine, this 13-ton Silver King ROTOCORD BELT was the result. It's one of the largest one piece conveyor belts ever produced. Made by the famous, exclusive BWH ROTOCURE Process of continuous vulcanization, this giant is 1576 feet long, 48 inches wide. It will haul better than 500 tons an hour on a rugged grade at the fast clip of 400 feet per minute. Maintenance worries are lessened by the absence of splices. It's another top performance by BWH . . . leaders for 71 years in the manufacture of mechanical rubber goods of dependable ruggedness for use in all industries.

HAVE YOU A JOB WHERE STAMINA COUNTS? Bring us your toughest problems. We're specialists in solving them. Consult your nearest BWH distributor or write us direct.

BWH
DEPENDAB • RUGGEDNESS
This is the ROTOCURE Process of continuous vulcanization, exclusive with BWH. It does away with the 30 to 40-foot overlaps occurring in the duck carcass in old-fashioned flat-press curing, eliminates the possibility of operational weakness caused by such overcuring.
Cured Belt
Continuous Uniform Cure
Continuous Uniform Stretch

Another Quality Product of

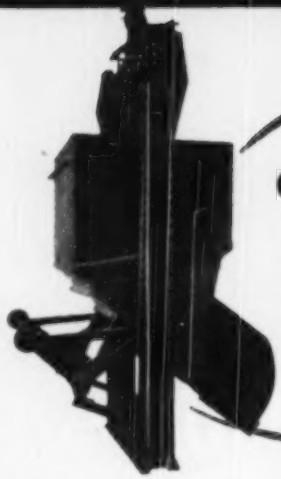
BOSTON WOVEN HOSE & RUBBER COMPANY

Distributors in all Principal Cities

PLANT, CAMBRIDGE, MASS., U.S.A. • P.O. BOX 1071, BOSTON 3, MASS.

"DEAD WEIGHT" COSTS YOU MONEY!

Reduce COSTS with



CONNELLSVILLE
(LEPLEY)
BOTTOM - DISCHARGE
SKIPS

THE PAYLOAD RATIO OF COAL TO SKIP IS GREATER THAN THAT OF COAL TO MINE CAR AND CAGE . . .

Backed by 40 years of acceptance, the Connellsville (Lepley) Bottom-Discharge Skip still remains the most efficient method of hoisting materials in shaft operations.

Its outstanding features—SMOOTH BALANCED OPERATION that reduces wear and tear on headframes and tipples . . . TOGGLE-LOCKED SKIP CHUTE that prevents spillage in transit . . . FULLY AUTOMATIC OPERATION with positive safety devices—result in the reduction of costly "dead weight".

Lower your shaft and tipple maintenance costs and reduce power consumption through fewer necessary trips with the Connellsville Bottom-Discharge Skips that can be custom-designed to meet your needs (including man-carrying platforms) in any tonnage requirement. Write for complete details today.

We also manufacture . . . HOISTS, HAULAGES, MINE FANS, ROTARY DUMPS, ROTARY ROCK AND SLATE DUMP CARS, SHEAVES, LEPLEY HOISTING EQUIPMENT, YOUGH PUMPS, and FORT PITT CAR CAGING EQUIPMENT.

CONNELLSVILLE
MANUFACTURING & MINE SUPPLY CO.
CONNELLSVILLE, PA.

"SERVING THE MINING INDUSTRY SINCE 1901"

COAL MEN ON THE JOB

LECCONY SMOKELESS COAL CO., Besoco, W. Va.: S. H. Hughes (left), mine electrician, and J. C. Swift, superintendent.

More "Coal-Men" pictures appear on other pages following.

terial-processing industries. The new laboratory is equipped to investigate, at cost, mineral-engineering problems involving heavy-liquid testing, heavy-media separation, flotation concentration, gravity concentration, amalgamation, scrubbing, agitation and washing operations, wet-classification problems, dewatering and thickening problems, crushing and grinding characteristics, cyanidation and so on. Results of each investigation will include a complete report and a recommended flowsheet to be used as a basis for commercial-plant design.

William F. McConnor, vice president in charge of sales of the National Tube Co., subsidiary of U. S. Steel, has been elected executive vice president of the company. H. J. Wallace, general manager of sales since 1946, has been made vice president in charge of sales, succeeding Mr. McConnor. William J. McKee, formerly sales manager of the Central area, has been appointed general manager of sales, replacing Mr. Wallace. Mr. McKee is succeeded by Louis W. Mason, formerly assistant to the general manager of sales.

Peerless Pump Div., Food Machinery & Chemical Corp., has announced completion of a new pump-testing laboratory at its Indianapolis, Ind., works. Involving an expenditure of more than a quarter million dollars, the new installation is reported to establish a completely new set of pump-testing standards. With a capacity of over 500,000 gal of water, which is reported to be the largest in the U. S., the new facilities feature many innovations in test-laboratory technique and equipment to insure top product quality and performance, the company says.

Morris Coupling & Clamp Co., Ellwood City, Pa., has elected C. F. Maroney president, and R. W. McGrew secretary.

When This Mine Mechanized they ran into difficulties

This particular mine in West Virginia found that mechanized full seam mining reduced operating costs and speeded up production, but mechanical mining also gave them some problems in the form of oversize and refuse that passed through the crusher. This oversize and refuse blocked washer refuse gates, causing frequent plant stoppages. The owners called in Pennsylvania engineers, and after a complete analysis of the problem a 10½' x 17' Open Feed End Pennsylvania Roller Mounted Bradford Breaker was erected in parallel with the existing primary shaking screens, picking table and lump crushing equipment (which can be used if necessary as an alternate flow).

In approximately 15 months, due to savings made possible with the Bradford Breaker, the cost of the machine had been amortized! Not only did it eliminate oversize stoppages, but the washing plant load was reduced 12% and picking labor 80%! This operating cost reduction is only part of the story; add to it low power requirement, low maintenance and long life, and it is easy to see why more and more mines are installing Pennsylvania Bradford Breakers in cleaning plants.

Pennsylvania Bradford Breakers crush, screen, and scavenge ROM all in one operation, automatically scooping out debris and, equally important, recovering large percentages of good coal clinging to high ash impurities. Crushing is by gravity impact, with continuous screening—passing sizes escape immediately while oversize stays trapped until shattered. Product is uniform, with minimum fines, no oversize, no large debris. Thus, cleaning plant capacity is increased; washers are protected against damage.

USE THIS PROBLEM ANALYSIS SERVICE

For the asking you can avail yourself of the services of our laboratory and thoroughly trained Pennsylvania engineers to help you get the right answer to your coal conditioning procedure. We'll be glad to hear from you. Would you like to receive a copy of Bulletin 3007?

PENNSYLVANIA CRUSHER COMPANY, *Division of Bath Iron Works Corporation,* 1711 Liberty Trust Bldg., Philadelphia 7, Pa. New York—Boston—Pittsburgh—Birmingham—Roanoke—Detroit—Chicago—St. Louis—Crosby, Minn.—Los Angeles—London, England.

SUNVIS H.D. 700 KEEPS RINGS FREE

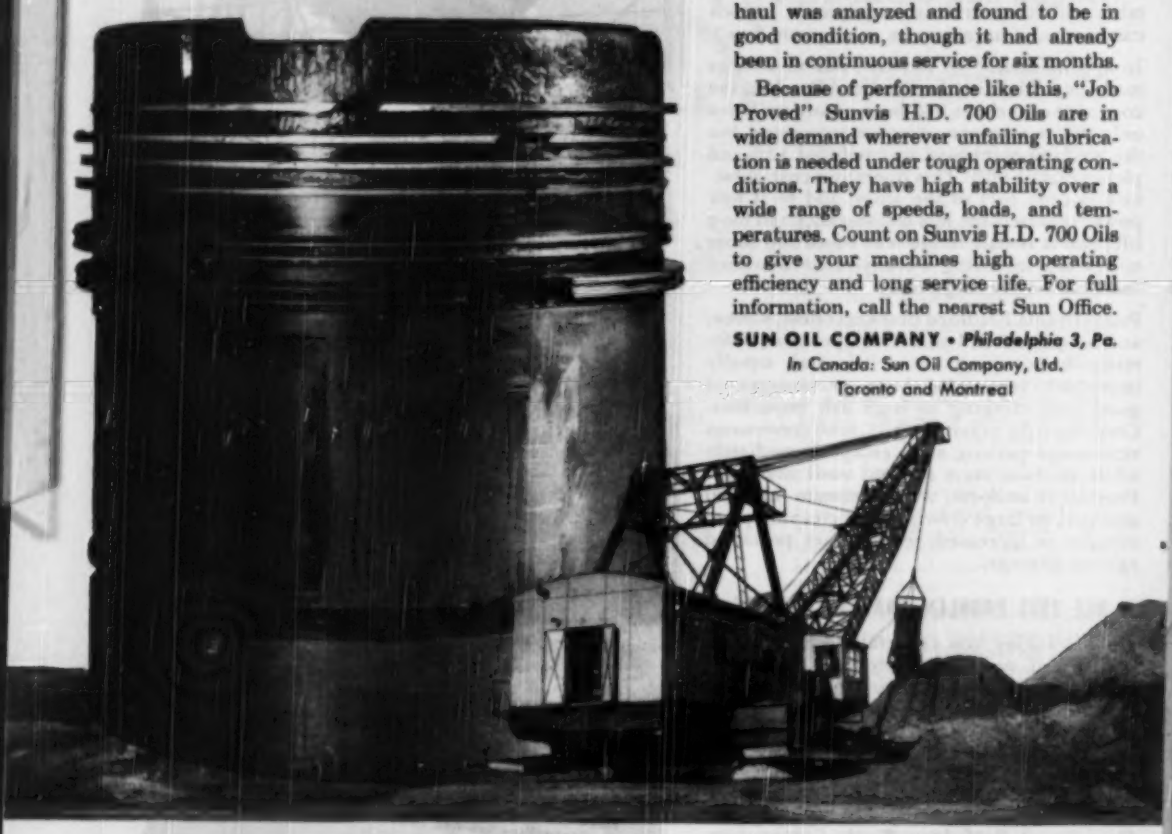
Pistons from Giant Diesel Dragline In Perfect Condition After 13,680 Hours

The piston shown in the unretouched photo below was recently removed from a Cooper-Bessemer 6-cylinder, 4-cycle diesel after a total of 13,680 hours of operation. The dragline shovel it helped power . . . and in which the owners had an investment of $160,000 . . . had been working 24 hours a day removing overburden from coal in strip mining.

The engine, *lubricated from the start by a Sunvis H.D. 700 Oil*, never lost a minute of operating time. The photograph tells why. Thanks to Sunvis H.D. 700 Oil protection, pistons were clean, the oil grooves open, the rings free, the skirts unmarred by seizure or scoring. The entire engine was clean and free of sludge or varnish, the bearings perfect, and not one of the cylinders showed more than 1/1000 inch wear. The charge of Sunvis H.D. 700 Oil in the crankcase at the time of overhaul was analyzed and found to be in good condition, though it had already been in continuous service for six months.

Because of performance like this, "Job Proved" Sunvis H.D. 700 Oils are in wide demand wherever unfailing lubrication is needed under tough operating conditions. They have high stability over a wide range of speeds, loads, and temperatures. Count on Sunvis H.D. 700 Oils to give your machines high operating efficiency and long service life. For full information, call the nearest Sun Office.

SUN OIL COMPANY • *Philadelphia 3, Pa.*
In Canada: Sun Oil Company, Ltd.
Toronto and Montreal



SUN PETROLEUM PRODUCTS
"JOB PROVED" IN EVERY INDUSTRY

SUNOCO®

Mine Open-House Attracts 3,000 Family Visitors

Some 3,000 members of the Consumer Mining Co.'s employee-family turned out Saturday afternoon, Aug. 19, for an open-house marking the opening of the new $200,000 Dorseyville portal at the company's Harmarville mine.

For many of the miners' wives and children, it was their first opportunity to see the inside of a mine. Upon entering the new slope, guests viewed an impressive display of equipment ready for use. Miners wearing safety hats and lamps served on the reception committee as guides and explained the operation of the various machines on display.

On the surface, visitors toured the new brick building, which houses a locker room, lamproom, first-aid station and supervisors' offices. In the main locker room, miners and their families were served refreshments provided by the company. The new portal is located a few miles beyond the main opening of the mine, on the Allegheny River some 20 mi above Pittsburgh. The company is a subsidiary of the Wheeling Steel Corp.

UMWA Stands Trial on NLRB Unfair Charges

Trial of the UMWA before the National Labor Relations Board on unfair labor practices charges growing out of the stoppage last winter began last month, as a NLRB trial examiner Aug. 16 refused to dismiss the charges. The union had earlier sought to have the charges dismissed on the grounds that coal operators who had brought them were willing to forget the matter.

The trial examiner said that he had no application from the operators to dismiss the charges, and the union's request for dismissal was opposed by the prosecuting representative of the NLRB General Counsel. The mineworkers' union had on Aug. 14 rejected a "compromise" agreement drawn up by the NLRB General Counsel that would have made the trial unnecessary.

In the first day of the hearing, it was reported, the union's admission of certain allegations in the complaints served to establish present coal operator associations as "appropriate bargaining units." Failure to establish such bargaining units in the past permitted John L. Lewis on several occasions to challenge the right of the Southern Coal Producers' Association to bargain.

The union is being brought to trial on charges that it violated the Taft-Hartley Act by insisting in negotiations on a union shop without a vote of its membership, the inclusion of the "able and willing" clause and a welfare fund that provides benefits to union members only. Many operators are reported to now feel that the contract signed this spring resolved and settled the basic issues involved.

Court Bans Picketing by UMWA Affiliate in W. Va.

UMWA District 50 and its affiliate, United Construction Workers, have been enjoined from "unfair practices" in connection with picketing three mines and a preparation plant of Carbon Fuel Co., Charleston, W. Va. The injunction, sought by the regional director of the National Labor Relations Board following a complaint filed by the Kanawha Coal Operators' Association, was granted July 19 by U. S. District Judge John Paul.

The union was said to have thrown picket lines around the company's Nos. 3, 9 and 12 mines and the cleaning plant after three mine-prop suppliers had refused to join the union.

Featured in This Section

Military Deferments Policies	p 136
Personal Notes	p 136
News in Brief	p 140
Coal and Business Activity	p 140
Bluefield Coal Show	p 142
Coal Men on the Job	p 142
Obituaries	p 146
Association Activities	p 154
New Developments	p 176
Foreign Developments	p 184
Coal Publications	p 186
Preparation Facilities	p 188

Two CF&I Officials Retire After 50 Yr of Mining

CONGRATULATIONS on their records are offered Bob Brownrigg (seated, left), mine electrician, and Dan Sutherland (center), superintendent of construction, as they completed more than 50 yr of service with the company. H. D. Pinkney (right), superintendent of CF&I Morley and Frederick mines, does the honors, assisted by R. A. Jackson (left), assistant chief engineer of the mining department, and George Kirk (center), CF&I employee services manager. More than 100 mining men from the CF&I properties throughout the state gathered at Trinidad, Colo., to attend a farewell party honoring the two pioneers. Mr. Sutherland joined the company in 1896 and Mr. Brownrigg in 1899.

How Armed Forces Deferment Policy Affects Coal-Industry Officials and Employees

National Guard, Army, Navy and Marine Reserves

Policy issued by the Department of Defense Aug 3 permits granting of a delay in call to active service only when the reservist is engaged in critical occupation necessary to a highly essential activity. The List of Critical Occupations as issued by the Department of Labor and the tentative List of Highly Essential Activities issued by the Department of Commerce are to be used as guides by the Armed Forces but there is no guarantee that men in such occupations or activities will be deferred.

Deferments are to be made on an individual basis only. Initial deferments may not exceed 6 mo and no extension may be made for more than 6 mo. At the end of each period the deferment will be reviewed to see if proper cause still exists, but the deferment can be terminated at any time for overriding military considerations. Fundamentally, a reservist is to be deferred only until he can be satisfactorily replaced. There is no provision for deferment because of dependency, but consideration is to be given hardship cases.

In addition to men in critical occupations in a highly essential activity, two other classes of reservists are to be considered for delay in call to active duty. Men not on the critical occupation list but "otherwise engaged or employed in a key position in a highly essential activity necessary to the national health, safety or interest as defined in the Department of Commerce List of Essential Activities" are to receive such consideration. Also reservists "occupying a critical key mangerial' position not otherwine accounted for in the Department of Labor List of Critical Occupations . . . may be authorized delay in call to active duty" if his call "would cause material loss in production, services or research necessary to the national health, safety or interest" and "the urgency of the civilian work outweighs the need of the armed forces for his services."

Anthracite, bituminous and lignite mining are included in the Commerce Department's tentative List of Essential Activities. Mining-company sales organizations are covered as a part of the wholesale trade. The Labor Department's List of Critical Occupations included mining and other types of engineers and various skilled occupations used in mining, but did not include miners as such. The list is tentative, however, and revisions and additions are to be expected.

Applications for delay in call to active duty should be made in writing when the reservist receives his call to active duty. Such requests made before orders to report are received will not be considered and will be held and not acted on until the reservist is ordered to active duty.

Applications for delay should be made as follows:

ARMY—By member of the Army Organized Reserve Corps through his unit commander or unit instructor to the Commanding General of the Army Area in which he resides.

NAVY—By Naval Reserve Officers addressed to the Chief, Bureau of Naval Personnel; non-aviators via their Naval District commandant; and aviators via the Chief of Naval Air Reserve Training, Naval Air Station, Glenview, Ill.

By non-aviation enlisted personnel addressed to their Naval District commandant; by enlisted aviator personnel addressed to the Chief of Naval Air Reserve Training, Naval Air Station, Glenview, Ill.

MARINE CORPS—By the individual through the chain of command, starting with the local inspector instructor.

AIR FORCE—To the headquarters of the numbered Air Force for the area in which the reservist resides.

NATIONAL GUARD—To the Adjutant General of the state, preferably with a copy to the individual's commanding officer.

The full details of the policy, together with the lists issued by the Labor and Commerce Department, may be secured by requesting Release No. 989-50 of Aug. 3, 1950, from the Personnel Policy Board, Department of Defense, Pentagon, Washington 25, D. C.

Selective Service

Deferments from the draft are to be on an individual basis, with the decision made by the local draft board, subject to appeal to the state board. Under Selective Service regulations, the local draft board is directed to place in Class II-A (occupational deferment) "any registrant whose employment in industry or other occupation or employment . . . is found to be necessary to the maintenance of national health, safety or interests." Basically, such deferment is prescribed when "the registrant cannot be replaced because of a shortage of persons with his qualifications or skill in such activity; and" his removal "would cause a material loss of effectiveness in such activity."

Application for deferment should be made by the employer at the time the registrant is up for classification and should accompany the registrant's returned classification questionnaire (SSS Form 100). There is no prescribed form for such an application but it is suggested that the employer write a letter setting forth in detail the reasons for the request. If the request for deferment is refused and the registrant is classified IA, he can obtain a hearing before the local board by making a written request within 10 days after receiving his classification. Appearance of the employer at this hearing is subject to permission of the local board. If this appeal is denied, both the registrant and his employer has the right of further appeal to the State Board of Appeals.

The Selective Service System has issued a "Civilian Users Force Analysis Sheet" (SSS Form No. 170) which is designed to help employers analyze the possible immediate effect of the draft on their own working force. It is so arranged that employers can set down the number of employees according to their skill, ages and probable liability for military service.

Personal Notes

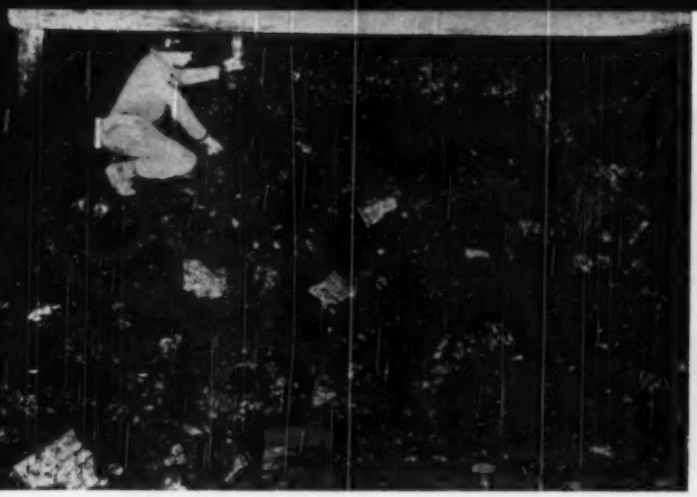
J. H. McElhinney, formerly vice president, has been made president, Consumers Mining Co., Wheeling, W. Va., succeeding **G. W. Hewitt**, who has retired. **George C. Trevorrow**, general superintendent of mines for the company, has been elected a director and vice president.

J. W. Oliver has been named to the new post of assistant to the president, Pittsburgh Consolidation Coal Co. Since the merger of Pittsburgh Coal Co. and Consolidation Coal Co. in 1945, Mr. Oliver has been assistant vice president and assistant treasurer of the company. He has been associated with the company or one of its constituents for 17 yr.

Joseph T. Berta, president, Pennsylvania Coal & Coke, has announced the following appointments effective Aug. 1. **Harold B. Wickey**, formerly general manager, to vice president—operations; **Francis X. Lee**, formerly controller, to vice president and secretary; **Andrew E. Heinrick**, formerly assistant secretary and credit manager, to treasurer.

Van B. Stith has been appointed vice president—mines, Anchor Coal Co., Highcoal, W. Va. Mr. Stith formerly was general superintendent of the company.

L. I. Cothern, formerly professor of mining engineering, Ohio State University, has been made director of



Face, top-cut and sheared, is ready for drilling. Later, drill holes are loaded with "Monobel" AA primed with Du Pont Electric Blasting Caps.

WANT MORE LUMP PER TON?

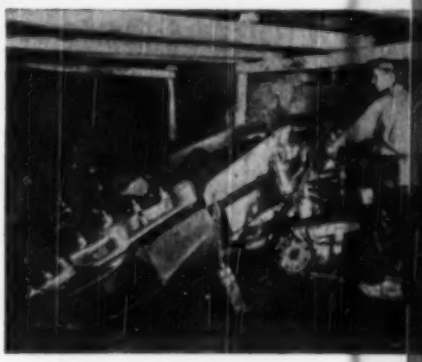
Use Du Pont "Monobel" AA

Operators of this West Virginia coal mine use "Monobel" AA to get more firm lump coal faster. Like many others, they find that this popular permissible produces the maximum percentage of top-grade lump coal per ton.

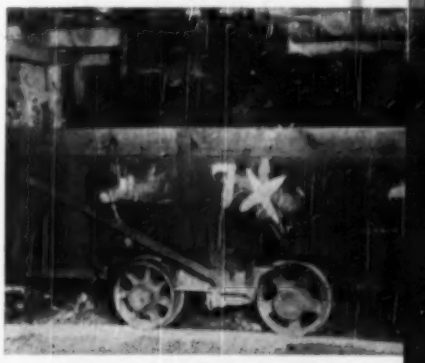
Its slow, heaving action puts the coal right where mechanical loaders can handle it easily and quickly—increasing both loading efficiency and high-percentage recovery.

"Monobel" AA speeds production, too. For its Class A fumes allow workers to return promptly to the face after the shots are fired. And since it has good water resistance, it often eliminates the need for stocking a second permissible for wet places.

Ask your Du Pont explosives representative for complete information about "Monobel" AA and other dependable Du Pont permissibles. E. I. du Pont de Nemours & Co. (Inc.), Explosives Dept., Wilmington 98, Delaware.



Two shots heave lump coal into easy loading position. Note even distribution of good lump coal. "Monobel" AA's Class A fumes permit quick return to the face.



Big chunks of coarse coal load easily, quickly . . . ready for trip to surface . . . saving time and reducing loading costs.

DU PONT PERMISSIBLES

Blasting Supplies and Accessories

DU PONT

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

HONORED FOR HEROISM, Ellis Bowman (left) receives a Joseph A. Holmes award from Earl Maize, director, safety division, NCA, at a meeting of the Big Sandy-Elkhorn Coal Mining Institute, in Pikeville, Ky. H. S. Homan (seated, left), executive secretary, Big Sandy-Elkhorn Coal Operators' Association, and C. H. Hodgson, district manager, Mine Safety Appliances Co., Hazard, look on. Ted Simpkins (right photo), Republic Steel Co., receives a Holmes award from Mr. Maize for supervising 259,555 man-hours underground without a lost-time accident.

Holmes Safety Awards Honor Two Coal Men

Ted Simpkins, supervisor of an underground crew at the Republic Steel Corp's. mine, Pikesville, Ky., was awarded a Joseph A. Holmes certificate for a sustained no-accident record; and Ellis Bowman, employed at No. 2 mine, Elkhorn Coal Co., Kona, Ky., was given a Holmes gold medal and certificate for heroism at a dinner meeting of the Big Sandy-Elkhorn Coal Mining Institute held in Pikeville July 28. Earl Maize, director, safety division, National Coal Association, made both presentations on behalf of the Holmes Association.

The award to Mr. Simpkins was in recognition of his supervision of an underground crew for 1,361 working days from 1944 to 1950 without a lost-time accident to any crew member (259,555 man-hours).

Mr. Bowman risked his life by climbing over the tops of several cars of a moving mantrip to reach the locomotive after the motorman had been thrown off and injured. He kept the trip under control on a downgrade and saved the lives of 22 men.

Guest speaker at the meeting was J. H. Edwards, associate editor, *Coal Age*, who discussed recent outstanding trends and developments in coal mining operation. In his slide-illustrated talk, Mr. Edwards reported on auger-mining methods and results in strip pits and in underground mines; improved safety with "upside-down" trolley wires; continuous transportation of coal from conventional-type loading machines; air cleaning of coal; and a new-low cost method of cleaning washing-plant water.

PERSONAL NOTES (cont'd)

engineering, Jewell Ridge Coal Corp., Tazewell, Va. In addition to his general duties, Mr. Cothern will supervise the 3-yr training period of young engineers who join the company. On July 1, the company employed eight graduate engineers from Ohio State, Virginia Polytechnic Institute and other colleges.

W. W. Brewer, tipple foreman, No. 5 mine, West Virginia Coal & Coke Corp., Omar, W. Va., was one of five employees who retired from active service with the company July 1 under the provisions of its retirement plan which became effective Jan. 1, 1949. Mr. Brewer had been a superintendent for the company from 1929 through 1937 and had returned to it in August, 1941. **C. E. Armstrong**, assistant secretary and assistant treasurer, also retired on the same date.

Earl C. Robinson has joined the Pittston organization as vice president of the Clinchfield Coal Corp. and chairman of the board of directors of the Clinchfield Fuel Co. Mr. Robertson was for some time vice president in charge of sales for the Pittsburgh Consolidation Coal Co.

R. W. Davidson, superintendent, Mine No. 38, Consolidation Coal Co. (W. Va.), has been appointed superintendent, Everettville mine, succeeding **L. E. Hetrick**, assigned to other duties, according to announcement by George R. Higinbotham, vice president-operations. **George C. Cain**, mine foreman at Mine No. 63, has been named superintendent at Mine No. 38 to replace Mr. Davidson. **Harry S. Turner** has been made mine foreman at No. 63.

Several promotions have been announced by the Clearfield Bituminous Coal Corp., Indiana, Pa. **A. E. Long**, formerly production superintendent, has been named general superintendent. **Robert St. Clair** has been promoted from auditor of disbursements to general supervisor of the accounting department, **Howard A. Ziegler** from accountant to chief accountant, and **J. K. Nicely** to chief payroll clerk. **M. S. Mitchell**, with the company for 47 yr, has retired as assistant to the general manager.

William Maratta, formerly associated with Eavanson & Auchmuty, has joined the engineering department of the Clinchfield Coal Corp., Dante, Va.

A number of changes in supervisory personnel have been announced by Eastern Gas & Fuel Associates. At Stotesbury No. 8 mine, the following new foremen have joined the organization: **D. D. Lambert, Louis Mitchell, W. Arnold, K. Pack** and **Carl Eskins. H. D. Parks** has been promoted from conveyor mechanic to section foreman at Helen No. 11 mine. **R. N. Cook**, formerly section foreman at Helen and Maitland mines, has been employed as section foreman at Kopperston No. 1 mine, and **A. Placidi** has been employed as section foreman at No. 2 mine. **High Blackburn**, section foreman, has been promoted to assistant to the 2nd-shift general foreman at No. 2 mine.

T. J. Crocker, assistant manager, has been appointed acting manager of coal mines, Bethlehem Collieries Corp., during the absence of **K. M. Quickel**, present manager.

H. J. Connolly, president, Pennsylvania Coal Co., has been appointed an alternate member of the Anthracite Committee, succeeding **Cadwallader Evans Jr.**, resigned.

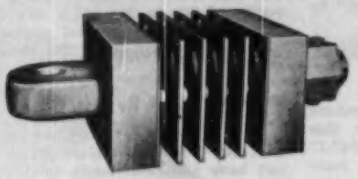
Wathen Browning, formerly assistant, has been promoted to superintendent, Illinois State Mine Rescue Station, Benton, succeeding **Ed Grezlak**, named a state mine inspector.

In transportation...

Willison Automatic Couplers

National NC-1 Truck

National M-225 Rubber-Cushioned Draft Gear



National M-250 Rubber-Cushioned Draft Gear

Naco Steel Swivel Hitching and Link

In processing...

Ore-Grinding Balls

Cast Steel Pallet and Mallix Sintering Bars

NATIONAL equipment cuts per-ton costs

Decades of experience combined with resourceful and advanced engineering have placed NATIONAL in the forefront as a producer of mine and industrial equipment for increasing safety at reduced per-ton cost.

New National NC-1 Trucks provide a smoother ride that results in less wear on cars . . . reduces impact on roadbed . . . minimizes spillage. Willison Automatic Couplers give maximum safety . . . speed up coupling, gathering and shunting . . . reduce surging, spilling and danger of derailment. National Rubber-Cushioned Draft Gears provide smooth cushioning action that reduces shock and protects equipment.

National Cast Steel Pallets and abrasive-resistant Mallix Sintering Bars last longer . . . reduce equipment down time. Rotary Steel Casting Company, a National subsidiary, produces ore-grinding balls that cost less per pound of ore ground.

Specify National products — *handle larger daily tonnages at lower per-ton cost.*

A 3258

NATIONAL Products FOR TRANSPORTATION AND INDUSTRY

NATIONAL MALLEABLE AND STEEL CASTINGS COMPANY

Cleveland, Ohio

News in Brief

Coal Hoarding Urged

Consumers were being urged last month by industry and public officials in many areas to stock up on coal, against a possible shortage of railroad transportation and other fuels. Among those offering such advice was New York City Markets Commissioner Anthony Masciarelli, who warned New York consumers they were not getting their share of anthracite. "Coal is one commodity that can and should be hoarded," he pointed out.

State Coal-Mine Operation Costs Virginia $26,047

The State of Virginia's venture into the coal business earlier this year cost its government $26,047.17 above the income taken in, the state auditor reported Aug. 18. The accounting covered the operation of the Emergency Fuel Commission from Sept. 28, 1949, to Feb. 16, 1950, and that of the Virginia Fuel Commission from Feb. 17 to April 6, 1950. During the strike crisis, the state bought, mined, distributed and sold coal through local fuel commissions. It sold $1,162,472.73 worth of coal during the period.

410 Groups Hear Coal Talks

Industry volunteers discussed the coal industry before 410 clubs and groups in 35 states, the District of Columbia and Canada during the 12 mo ending June 30, the Speakers' Bureau of Bituminous Coal Institute revealed last month. The talks, which are scheduled through BCI, are made by volunteers who are equipped with "kits" that contain prepared speeches for their guidance. In requesting a speaker, each group selects its own subject. Of the 410 talks made during the year, 72 were on the coal strike and 53 on labor union monopoly.

B. & O. Leases 38 Diesels

The B. & O. announced July 27 that it has arranged to lease 38 diesel electric locomotives under a plan recently offered the railroads by the Equitable Life Assurance Society. The units, being built by the Baldwin Locomotive works for delivery by November, will include 14 freight locomotives and 24 switchers. The line also has asked for bids on 1,000 50-ton steel box cars and 1,000 70-ton steel gondola cars, Roy B. White, president, said.

Coal-to-Oil Plant Readied

Major construction work on the new USBM gas-synthesis demonstration plant at Louisiana, Mo., has been completed and actual operation is to be expected early next year, it was announced last month. The first of its type in the country, the plant will produce 80 to 100 bbl a day, converting coal to oil by a modified Fischer-Tropsch process. Built at a cost of $4,915,000, the plant is the second to be completed at Louisiana by the USBM. The first was a hydrogenation-demonstration plant with a capacity of 200 to 300 bbl a day that has been in experimental operation since early 1949, using the Bergius process.

Welfare Fund Restricted

John L. Lewis reported last month that the UMWA Welfare Fund did not have sufficient funds to provide benefits for disabled miners, widows and dependent children. His statement was contained in a letter to Andrew Cline, Local 2010, Barnesboro, Pa., who inquired about aid to the disabled and their payment of union dues of $1 monthly. In commenting on the situation, Mr. Lewis wrote, in part: "The trustees, however, have not yet been able to make effective a program of assistance to disabled miners, widows and dependent children. Money for such a program is simply not available due to market conditions in the industry and the reduced work week resulting therefrom. The income of the fund, therefore, has not been sufficient to warrant resumption of further obligations since it would be unable to meet them under present conditions."

Coal Town Hits Oil Burners

Dupont Borough has joined three other communities in the upper end of Luzerne County, Pennsylvania, in official action designed to stop the installation of oil burners in residences and business establishments, when its council Aug. 7 adopted a resolution condemning the use of oil burners in the anthracite community. An ordinance providing rigid restrictions on oil-burner installations was to be drawn up by the borough solicitor and was expected to be passed at the next meeting of the council.

Bureau Draws Plans for Big Anthracite Tunnel

Within 2 yr the Bureau of Mines may have plans ready for a 300-mi-long twin-bore tunnel to drain water from anthracite reserves now flooded in eastern Pennsylvania, S. H. Ash, chief, safety branch, announced July 28. The tunnel would be built from the anthracite field to tidewater, near Havre de Grace, Md. Costing from $300,000,000 to $500,000,000, the project would open new coal reserves, extend the life of the anthracite industry and provide 600,000 gpm of "excellent" water for the industrial area from Jersey City to Baltimore. Also, it would provide a new source of electric power, Mr. Ash stated.

What's Happening to Coal and Business Activity

Coal Production		1950 to This Date	1950 Over 1949, to Date
Est. anthracite prod., week ending Aug. 12	962,000	26,775,000	+3.5%
Est. bituminous prod., week ending Aug. 12	10,832,000	287,556,000	—4.8%

Source: U. S. Bureau of Mines.

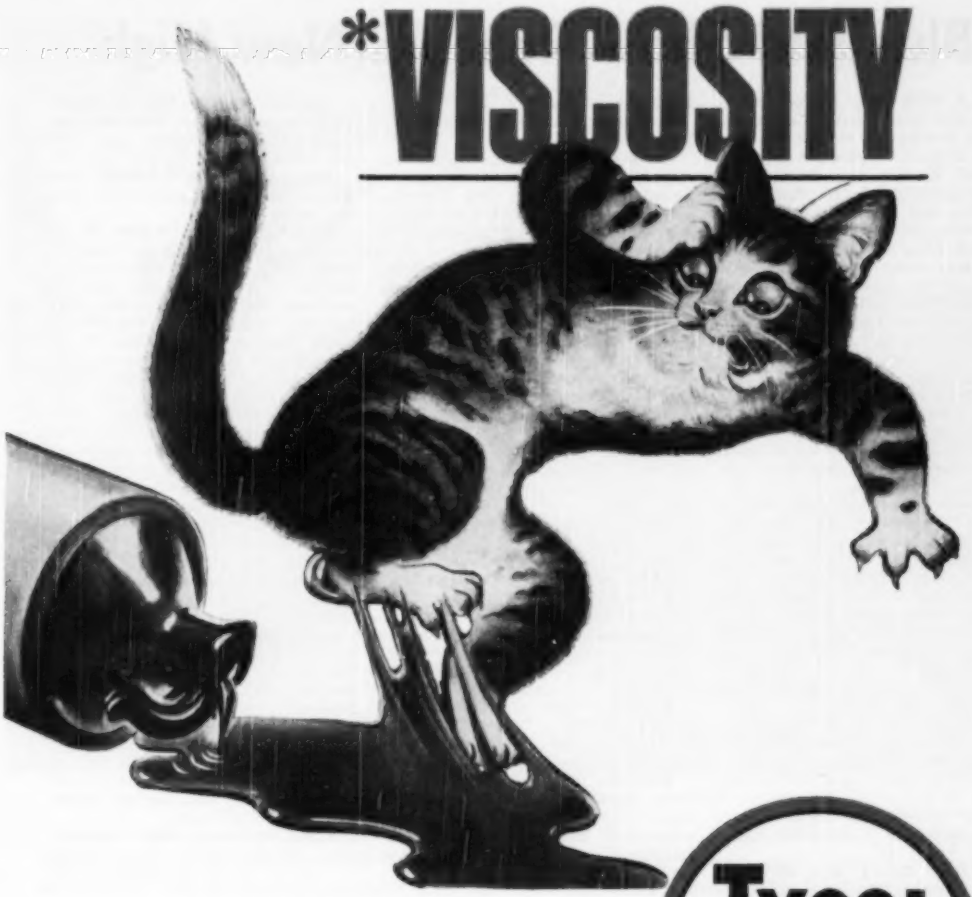
	Bituminous Coal Stocks (Thousands, net tons)				Consumption (Thousands, net tons)		
	July 1, 1950	Days' Supply	June 1, 1950	July 1, 1949	June, 1950	May, 1950	June, 1949
Electric power utilities	19,505	85	16,774	25,607	6,779	6,645	6,338
By-product coke ovens	11,199	42	9,872	13,747	8,072	8,367	7,523
Beehive coke ovens	....	..	....	....	799	704	415
Steel and rolling mills	931	31	841	1,376	558	622	559
Cement mills	902	43	771	1,603	636	649	633
Other industrials	12,758	54	11,769	17,189	7,127	7,738	7,147
Railroads (Class I)	3,802	24	3,113	9,818	4,727	4,926	5,274
Retail dealers	2,178	15	1,995	2,810	4,485*	4,380*	5,717*
Total	51,295	46	44,795	74,152	33,183	34,031	33,606

Source: U. S. Bureau of Mines. *Retail dealer deliveries.

Business Activity	Latest Week*	Month Ago	Year Ago
Business Week Index of Business Activity, wk. ending Aug. 12	220.7	215.8	182.0
Steel ingot operations (% of capacity)	100.1	99.4	83.5
Electric power output (million kw-hr.)	6,263	6,006	5,530
Crude oil production (daily avg., 1,000 bbl.)	5,675	5,495	4,775
Misc. and L.C.L. carloadings (daily avg., 1,000 cars)	80	76	70
All other carloadings (daily avg., 1,000 cars)	60	56	50
Prices, spot commodity index (Moody's, Dec. 31, 1931 = 100)	430.0	433.5	399.8
Prices, industrial raw materials (B.L.S., Aug., 1939 = 100)	284.3	286.8	217.5
Prices, domestic farm products (B.L.S., Aug., 1939 = 100)	348.0	330.4	291.9
Prices, finished steel composite (*Iron Age*, lb.)	3.837c	3.837c	3.705c
90 stocks, price index (Standard & Poor's Corp.)	145.7	134.4	121.8

*Date of latest week for each series on request.

*VISCOSITY



All equipment will last longer — give better service — if you use the proper lubricant. That's why you'll find it profitable to use Tycol high quality oils and greases.

There's a reason! No matter what your lubrication need — for roll neck bearings or mine cars, Diesels or high speed textile spindles, turbines, paper calenders or steam engines . . . where *VISCOSITY, penetration, extreme pressure is a factor — Tycol has a lubricant suited to your specific requirements.

Refined from selected crudes, Tycol lubricants are exceptionally resistant to breakdown which means greater economy . . . longer life for every type of equipment.

Let us show you the extra value in every measure of Tycol lubricants. Write your nearest Tide Water Associated office today.

TYCOL

INDUSTRIAL LUBRICANTS

Boston • Charlotte, N. C. • Pittsburgh • Philadelphia • Chicago Detroit • Tulsa • Cleveland San Francisco • Toronto, Canada

TIDE WATER ASSOCIATED OIL COMPANY

17 BATTERY PLACE, NEW YORK 4, N. Y.

*LEARN WHAT THIS PRODUCT CHARACTERISTIC MEANS TO YOU — READ "LUBRICANIA"
This informative handbook, "Tide Water Associated Lubricania," gives clear, concise descriptions of the basic tests used to determine important properties of oils and greases. For your free copy, write to Tide Water Associated Oil Company, 17 Battery Place, New York 4, N. Y.

REFINERS AND MARKETERS OF VEEDOL — THE WORLD'S MOST FAMOUS MOTOR OIL

Bluefield Show Reaches New High

WITH A NEW RECORD in exhibitors, the 1950 Southern Appalachian Industrial Exhibit was held at the Norfolk & Western Ry. freight terminal, Bluefield, W. Va., Aug. 16-19, under the sponsorship of the Pocahontas Electrical and Mechanical Institute, in co-operation with coal, railroad, wholesale and other interests.

Collateral events included the 1950 reunion of the Pioneer Safety Miners' Club, with Fred Bailey, Cardox Corp., as master of ceremonies, and a Miner's Gadget show. Gadgets submitted, in the order of ranking in the judging, were:

1. Multichart payroll calculator, by M. I. Jackson, Olcott, W. Va.
2. Browning dust collector for roof bolting with air leg and air-injection dust collection, by Roscoe Browning, Hampden, W. Va.
3. Combination exhibit by John C. Baldwin, Bluefield, W. Va., consisting of (a) a combination safety jack and hand roof or sidewall drill, and (b) a tapered-end roof bolt with reamer for tapering upper end of hole and special shell and driver for attaining snug fit.
4. Safety mine-car scotch, by E. B. Wagner Sr. and E. B. McNeer, Matoaka, W. Va.
5. Weight-controlled push mine door, by Donald Bailey.
6. Rerailing device, by H. R. Venters and E. L. Setleff. Killarney (W. Va.) mine, Lillybrook Coal Co.
7. Duckbill skid, by T. W. White, Raven, Va.
8. Ball-socket swivel-type mine-car coupling, by S. R. Ashworth, Bluefield, W. Va.
9. Safety mining nip, by Ross Kiser, Bandy, Va.

Equipment exhibits included the following:

Acme Machinery Co., Williamson, W. Va.—Rubber-tired and track-mounted compressors, shop compressors, compressor blocks, LeRoi drilling equipment, Allied Engineering Co. roof-bolting dust collector.

Aero Service Corp., Philadelphia, Pa.—Aerial surveying and mapping service.

Ahlberg Bearing Co., Pittsburgh, Pa.—Ahlberg and X-Change ball bearings.

Allied Chemical & Dye Corp., Solvay Div.—Solvay calcium chloride.

Allis-Chalmers Mfg. Co., Milwaukee, Wis.—Transformers, SRL rubber-lined pumps, Texrope drives and sheaves, Varipitch sheaves, coal screens, air contactors and motor-control units.

American Blower Corp., Detroit, Mich.—Type T, SC and Gyrol fluid drives.

American Brattice Cloth Corp., Warsaw, Ind.—Mine-vent tubing and couplers; ABC brattice cloth.

American Car & Foundry Co., Huntington, W. Va.—ACF West Virginia Coal & Coke Corp. rotary-dump car, 30 in high, 150 cu ft.

American Coal Co. of Allegany County, McComas, W. Va.—Locomotive built in Crane Creek shop, 28 in high, 44-in gage, 15,000 lb.

American Mine Door Co., Canton, Ohio—Mighty Midget Distributors, other rock-dust distributors, cable vulcanizers, headlights, Canton "Elec tri-Throw" switch throwers, Canton signal systems.

American Steel & Wire Co., Cleveland, Ohio—Wire rope Amerclad electrical wires and cables, Tigerweld rail bonds.

Anaconda Wire & Cable Co., New York—Securityflex cold-rubber mining cables.

Anchor Sales Co., Beckley, W. Va.—Hi-Loy shovels, Midvale tires, National drills and tools, Nicholson files, Parker & Prentiss vises, Roebling wire rope and fittings, Simplex jacks, Victualic couplings and full-flow fittings, Warren miner's tools, W. B. locks, Ridgid pipe tools, Alcoa aluminum pipe and fittings, Rome mining cables, Greenfield taps and dies, Burndy electrical specialties, Chisholm-Moore hoists, Heller tools, Fulton brattice cloth, Gemco track tools, Green-Tweed tools, Fulton track tools and cutter bits, Permold cable splicers, American Brattice Cloth Corp. products, Crosby clips, Armstrong lathe tools, B-W-H conveyor belting and hose, Diamond, tools, Dixon hose connectors and valves, Eagle oil and supply cans, Excel fuses, Flexco belt fasteners.

Appalachian Engineering & Equipment Co., Inc., Bluefield, W. Va.—Walcot products, Cuno Engineering products, Rodgers hydraulic products, Steelcaft products, Robins conveyors and screens, Macwhyte wire rope, Johnson-March Compound "M," screens, crushers, conveyors, compressors, drills, pumps, motors, rubber belts, hoists, hose, feeders, rubber-tired tractors and cars.

Armco Drainage & Metal Products, Inc., Youngstown, Ohio — Steelox

(*Continued on p* 156)

COAL MEN ON THE JOB

AT TIOGA (W. VA.) NO. 5 MINE, Nicholas Webster Coal Co.: W. C. Weaver (left), manager of the company; P. D. Horan, sales engineer, Virginian Electric Co., Charleston; Stanley Deal, mine superintendent; and Bailey Evans, general night foreman, are snapped by the Coal Age photographer.

A. S. DICKSON, pit foreman, Enos Coal Mining Co., Oakland City, Ind.; and O. L. Peavler, top foreman, Mine No. 47, Peabody Coal Co., Harco, Ill.

More Coal-Men-on-the-Job pictures appear on other pages of this section.

J. Howard Morgan, secretary-treasurer of the Cedar Heights Coal Company, Oak Hill, Ohio, makes that statement about the new International TD-24 working on the company's stripping operations. "We are completely sold on International equipment," says Mr. Morgan. "We use four units in our operation here and they can't be beat. In six months use we have had no repairs except one minor item. This TD-24 looks like it will duplicate the endurance of our International TD-18 which operated two years before the engine was touched."

This is a statement by one more highly satisfied TD-24 owner. Never before has a tractor been so perfectly adapted to strip mining operations. The broad range of speeds, eight forward and eight reverse, on-the-go shifting with synchromesh transmission and the separate forward-reverse shifting lever combine to make the TD-24 the ideal tractor for strip mining. When you add the unequalled ease of control provided by "Planet Power" drive you'll find the TD-24 a matchless crawler when there's dirt to be moved.

If you haven't already seen the new TD-24, now is the time to visit your International Industrial Power Distributor. Let him give you a demonstration of this "Champion of Crawlers." When you see it work you, too, will say the TD-24 is "perfect" for strip mining operations.

INTERNATIONAL HARVESTER COMPANY • CHICAGO

INTERNATIONAL HARVESTER

INTERNATIONAL INDUSTRIAL POWER

CRAWLER TRACTORS • WHEEL TRACTORS • DIESEL ENGINES • POWER UNITS

Where **WOOD** is indicated and **PERMANENCE** demanded

Specify

treatment with DU PONT COPPERIZED CZC

You'll think of wood as a *different* structural material after it's pressure-treated with Du Pont Copperized CZC. And here's why. Copperized CZC gives long-lasting protection against termites, fire and decay *without changing* the inherent structural characteristics of wood.

This salt-type wood preservative makes lumber and timber unpalatable to termites . . . kills decay-causing fungi . . . gives a high degree of fire retardance. Copperized CZC does all this while leaving wood clean, paintable, odorless and safe to handle. Sound reasons why you should specify pressure-treatment with Du Pont Copperized CZC.

Full technical details on Copperized CZC available for the asking. Write: E. I. du Pont de Nemours & Co. (Inc.), Grasselli Chemicals Dept., Wilmington 98, Delaware.

DU PONT

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

COAL MEN ON THE JOB

E. R. SPRADLIN, master mechanic, Wasson Coal Co., Boonville, Ind.; T. E. Hay, garage foreman, Tecumseh Coal Corp., Boonville, Ind.; and A. W. Stone, superintendent, Powderly mine, Morgan Coal Co., Greenville, Ky.

FABIN BICARD, shooting foreman, Mine No. 17, Maumee Collieries Co., Clay City, Ind.; Roy Gary, tipple foreman, Rio Verde mine, Norton Coal Corp., Green River, Ky.; and Homer Crabtree, storekeeper, Colonial Coal Mining Co., Madisonville, Ky.

E. CARL BRAGG, foreman, No. 8 mine, Spruce River Coal Co., Ramage, Boone County, W. Va.; J. E. Mullens, mine foreman, Catlette Coal Co., Persinger, W. Va.; and H. Brown, tipple foreman, Galloway No. 3 mine, Simpson Creek Collieries Co., Galloway, W. Va.

More "Coal-Men" pictures appear on other pages following.

you can get MORE*

* MORE tons per fall
* MORE domestic sizes per ton

when you shoot with

RED CROWN PERMISSIBLES

6 ADVANTAGES
In Every Red Crown Shot

1. Red Crown is easy on the roof.
2. Slow heaving and spreading action with results similar to those obtained with the use of black powder.
3. Power distributed evenly throughout the face of the cut.
4. Coal displaced in firm, hard lumps means less degradation.
5. Red Crown, containing no nitroglycerine, is the non-headache permissible.
6. Less smoke and fumes means less down-time for expensive equipment.

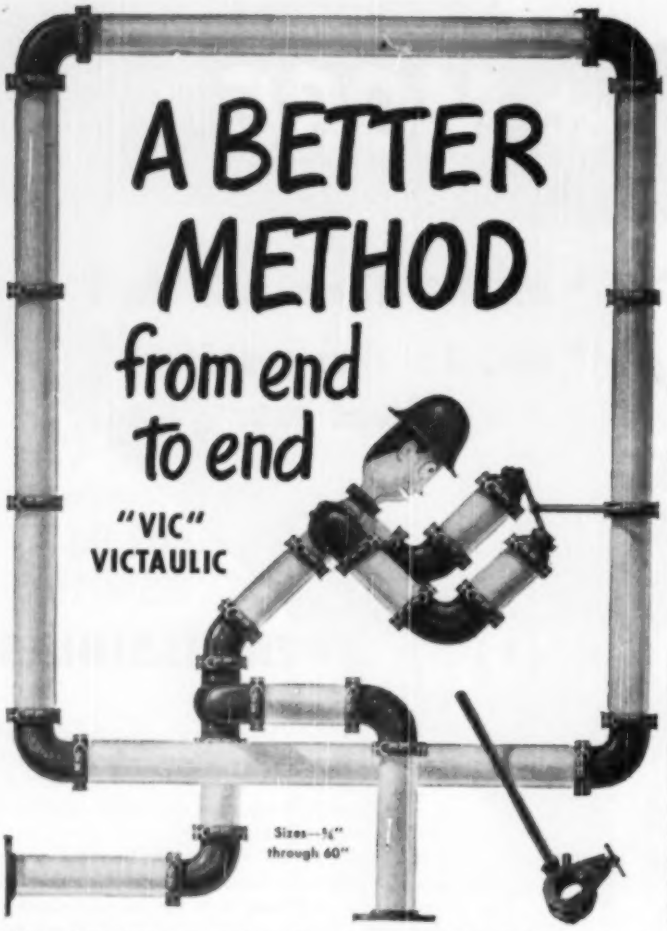
Shoot for the premium domestic market with Red Crown — the patented, Class A Permissibles that have *proved* their ability to produce *more* and *better* lump coal at *less cost* per ton!

Red Crown shoots with *s-l-o-w*, heaving action that has *great spread*. In either firm or friable structure, Red Crown results in preparation very nearly equal to that obtained with black powder. Red Crown shears the ribs clean; breaks the face along its natural lines of cleavage, without severely shattering the coal in the vicinity of the hole. Lumps are firm, contain fewer pin cracks—there's less degradation in transit from mine to dealer to consumer.

In many mines, Red Crown has resulted in substantial increases in the percentage of domestic sizes. Why not see what Red Crown can do for you? We will be glad to demonstrate Red Crown in your mine at your request. Just say the word to your King Powder representative or write us direct. You'll *profit* by arranging that demonstration date today.

KING EXPLOSIVES

THE KING POWDER CO. INC.
CINCINNATI 1, OHIO . . . . INCORPORATED 1878



No matter how you look at it, VICTAULIC offers a method of piping that will save time, work, and dollars on construction and maintenance from one end of the line to the other.

The VICTAULIC METHOD is easy, quick, and sure. For joining those pipe ends – two bolts hook up Victaulic Couplings in a jiffy, a standard T-wrench is the only tool needed. AND Victaulic joints stay positive-locked, leak-proof . . . they stand up under extreme pressure, vacuum, or strain conditions!

Grooving those pipe ends is a cinch with the VICTAULIC METHOD . . . "Vic-Groover" grooves 'em automatically in half the time of a conventional pipe threader!

Victaulic Full-Flow Elbows, Tees, and other Fittings are designed for free-flowing efficiency . . . to give complete versatility and dependability to the VICTAULIC METHOD.

You just can't beat the COMPLETE Victaulic System for efficient piping construction . . . it's the EASIEST WAY TO MAKE ENDS MEET.

* * *

Make *your* next piping job ALL VICTAULIC. Write today for these two: Victaulic Catalog and Engineering Manual No. 44, "Vic-Groover" Catalog No. VG-47.

VICTAULIC COMPANY OF AMERICA
30 Rockefeller Plaza, New York 20, N. Y.

Victaulic Inc., 727 W. 7th St., Los Angeles 14, Calif.
Victaulic Company of Canada, Ltd., 200 Bay Street, Toronto 1
For Export outside U.S. & Canada: PIPECO Couplings & Fittings; Pipe Couplings, Inc., 30 Rockefeller Plaza, New York 20, N. Y.

26TH VICTAULIC YEAR

Copyright 1950, by Victaulic Co. of America

The easiest way to make ends meet
VICTAULIC
PIPE COUPLINGS AND FITTINGS

MEETINGS

- Central Pennsylvania Coal Producers' Association: annual meeting, Sept. 14, Bedford Springs Hotel, Bedford Springs, Pa.
- Indiana Coal Preparation and Utilization Society: annual Indiana Coal Conference, Sept. 22-23, Terre Haute, Ind.
- Mining Electrical Group: exhibit, Sept. 26-28, West Frankfort, Ill.
- American Coke & Coal Chemicals Institute: annual meeting, Sept. 28-29, Skytop Lodge, Skytop, Pa.
- Coal Producers' Association of Illinois: annual meeting, Oct. 10, Springfield, Ill.
- National Safety Council: 38th National Safety Congress and Exposition, Oct. 16-20, Chicago.
- Coal Division, AIME, and Fuels Division, ASME: joint meeting, Oct. 23-25, Statler Hotel, Cleveland, Ohio.
- Illinois Mining Institute: 58th annual meeting, Nov. 17, Hotel Abraham Lincoln, Springfield, Ill.
- W. Va. Coal Mining Institute and Central Appalachian Section, AIME: joint meeting, Nov. 24-25, The Greenbrier Hotel, White Sulphur Springs, W. Va.

Obituaries

M. G. Driessen, 51, Lebanon, Pa., died July 16 in Thun, Switzerland, following an emergency operation. Mr. Driessen, formerly with the Dutch State Mines, had developed new processes for cleaning fine coal. Shortly before his death, he had attended the International Conference on Coal Preparation in Paris. At the time of his death, he was consulting engineer, Heyl & Paterson, Inc.

Capt. Austin Eugene Lathrop, 84, was killed July 19 when he was crushed beneath the wheels of a coal car at his Healy River coal mine, the largest in Alaska. Active in Alaskan business ventures since before the beginning of the century, Capt. Lathrop was one of the most prominent residents of the Territory, owning a daily newspaper at Fairbanks, two radio stations and five theaters.

Albert R. Beisel, 69, vice president and general manager of the Island Creek Coal Co. until his retirement in 1937, died Aug. 13 at his home in Huntington, W. Va. A graduate of Lehigh University, Mr. Beisel became chief engineer of the Pond Creek Coal Co., an Island Creek subsidiary, in 1911. Two years later he became general superintendent of Island Creek and in 1915, general manager of Island Creek and its subsidiaries. He was elected a vice president in 1933. During his career, Mr. Beisel

Lower your costs with these *McCarthy* shot-hole *Drills*

● McCarthy Blast Hole Drills bore shale and rock formations to produce deeper and truer blast holes in less time with less effort.

McCarthy Drills have heavier, more ruggedly built frames, with finger-tip controls, heavy-duty transmissions and alloy steel gears and shafts. Each unit is provided with an abundance of power, supplied from gasoline, diesel or electric motors.

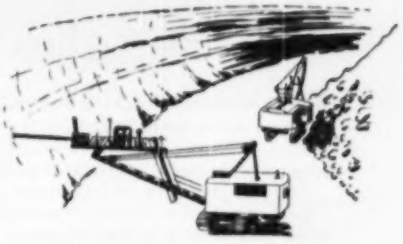
Simplified designing permits increased mobility of both horizontal and vertical models . . . makes McCarthy the favorite in the field . . . the top performer of them all!

For high speed, high level drilling, there's the McCarthy Horizontal Drill for mobile mounting; there's a Self-Propelled, highly maneuverable unit for drilling blast holes close to the floor or bottom; and a compact, powerful Vertical Drill with a hydraulic tower that folds flat for travel.

Each of these McCarthy Drilling Units was developed for a specific job. Rigid tests prove conclusively that McCarthy Drills produce more footage at less cost than any other drills on the market.

Make the Salem Tool Company headquarters for all your drilling needs. Write now for information about how McCarthy Drilling equipment can increase your production and lower your blast hole drilling costs.

Vertical Drill Mounted on Half Track



Horizontal Blast Hole Drill Mounted on Shovel Boom

Truck Mounted Blast Hole Drill

Self-Propelled Blast Hole Drill

Vertical Blast Hole Drill

THE SALEM TOOL COMPANY

769 SOUTH ELLSWORTH AVENUE SALEM, OHIO, U. S. A.

GAIN MINING ECONOMY

with this Dual Purpose building

Here's a way to save money and assure dependable shelter for every mining need. Simply specify Armco STEELOX Buildings . . . the structure that is equally suited for use on permanent sites or at temporary locations.

This way you get all the advantages you would normally expect of any other permanent structure plus easy portability. Obsolescence is never a problem.

You'll also like the ease and economy of erecting Armco STEELOX Buildings. A small unskilled crew can do the job in a matter of hours. The completed structure is weather-tight, fire-resistant and lightning-safe when properly grounded.

Long life is assured because STEELOX Buildings are made of 18- and 20-gage Armco ZINCGRIP-PAINTGRIP Steel. This durable material is 2 to 3 times as heavy as ordinary galvanized siding and roofing. What's more, you can paint it immediately without pre-treatment, and paint lasts longer.

Choose Armco STEELOX Buildings for head houses, cap storage, utility buildings and all your mining needs. Write us for complete data. Armco Drainage & Metal Products, Inc., 2290 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation.

Export: The Armco International Corporation

ARMCO STEELOX BUILDINGS

ARMCO

EQUIPMENT APPROVALS

Five approvals of permissible equipment were issued by the U. S. Bureau of Mines in July, as follows:

Albert & J. M. Anderson Mfg. Co.—Distribution box; two or three branch circuits, 220, 440 or 550 v, ac; Approvals 2-744 and 2-744A; July 12.

Joy Mfg. Co.—Type PL8-4-PAE elevating conveyor; one motor, 7½ hp, 230 v, dc; Approval 2-745; July 17.

Joy Mfg. Co.—Type U-179-50N chain conveyor; one motor, 7½ hp, 500 v, ac; Approval 2-746A; July 18.

Clarkson Mfg. Co.—Type 28FA loading machine; one motor, 50 hp, 230 v, dc; Approval 2-747; July 31.

Mine Safety Appliances Co.—Type No. 49408 multiple-shot dry-cell condenser blasting unit; Approval 1608; July 27.

had been active in the W. Va. Coal Operators' Association, the NCA and the W. Va. Coal Mining Institute.

Humphrey D. Smith, 62, active in the Pocahontas field since 1910, died in his sleep during the night of Aug. 16 at his home in Bluefield, W. Va. He had not been ill and had attended the Bluefield Coal Show during the day. A graduate of Lehigh University, Mr. Smith was associated with the Fourseam Coal Corp. at the time of his death. During the past 40 yr, Mr. Smith had served as an operating executive for a number of companies in the area and also had maintained a practice as a consulting engineer.

Samuel A. Taylor, 86, retired consulting engineer of Pittsburgh, died Aug. 20. An 1887 graduate of the Western University of Pennsylvania, now the University of Pittsburgh, Mr. Taylor celebrated the 75th anniversary of his association with the coal industry on May 10, 1949. He was one of the oldest alumni of Pitt and was Dean of the School of Mines from 1910 to 1912. The university awarded him a degree of Doctor of Science in 1919.

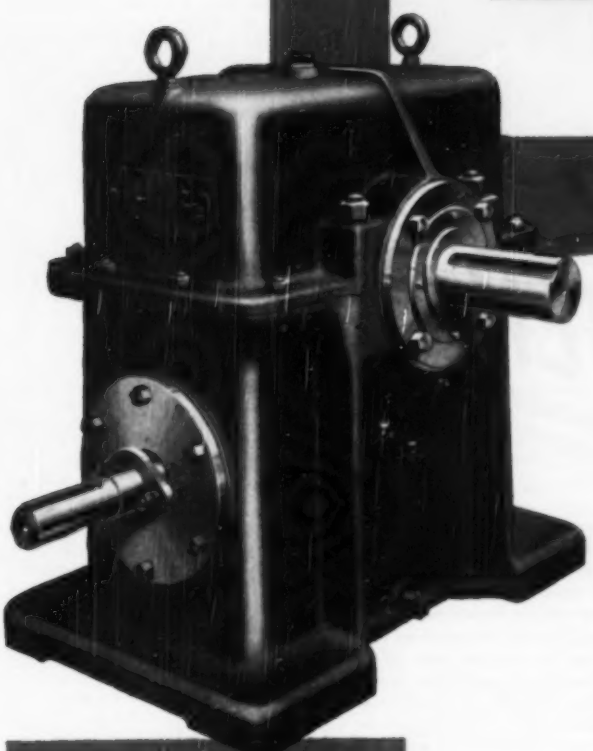
William W. Lewis, 71, died Aug. 17 at Harlan, Ky., after a brief illness. In addition to his association with the Cornett-Lewis Coal Co., Louellen, Ky., Mr. Lewis was head of the Bank of Harlan and part owner of the Kentucky-Virginia Stone Co., Middlesboro, Ky.

Henry R. Owens, 67, a retired Pennsylvania state mine inspector, died Aug. 22 at his home in Kingston, Pa., following a heart attack. Mr. Owens was a past president of the Mine Inspectors' Institute of America.

Edwin J. Holman, 75, a Colorado state mine inspector, died Aug. 5 when he was struck by a truck trailer in Durango, Colo.

Jones

WORM GEAR SPEED REDUCERS



A right angle unit built for heavy duty performance in any industry. The worm can be above or below the gear. Shafts single or double extended for coupling connections or chain or gear drives.
They are built in ratios from 4 to 1 to 90 to 1 and in capacities from ¼ to 100 H.P.
Bulletin No. 68 covers selection tables and dimensions.

W. A. JONES
FOUNDRY & MACHINE CO.
4401 W. Roosevelt Road
Chicago 24, Ill.

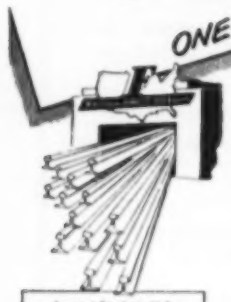
Since 1890
Jones

HERRINGBONE—WORM—SPUR—GEAR SPEED REDUCERS
PULLEYS • GEARS • V-BELT SHEAVES • ANTI-FRICTION
PILLOW BLOCKS • FRICTION CLUTCHES • FLEXIBLE COUPLINGS

Need Rails?

You'll get them .... FASTER FROM FOSTER

ONE TON OR A THOUSAND



Largest Stocks in U.S.
NEW & RELAYING

For a safe, efficient and economical haulage system, buy Rails and related Track Accessories from a reliable single-source – FOSTER. You save time, money and effort as a result of Foster's large-scale rail warehousing operations. All Foster warehouses can make immediate shipments of anything you need—new installations or replacements. We'll match sizes or specifications to meet your exact requirements on any job. *FOSTER guarantees—all material rigidly inspected before shipment—If on arrival, it is not entirely satisfactory to you, it is returnable, freight both ways at our expense.*

Send For Free Rail Catalog, Dept. C-4

STEEL SHEET PILING • PIPE & PIPE FABRICATION • RAILS • TRACK ACCESSORIES • WIRE ROPE

L. B. FOSTER CO.

PITTSBURGH 30, PA. CHICAGO 4, ILL. NEW YORK 7, N. Y. HOUSTON 2, TEX.

Coal Companies Report On 6-Mo Earnings

Net profit for the Island Creek Coal Co. and subsidiary companies was $2,178,093 for the first half of 1950, compared with $2,934,205 for the same period in 1949. Earnings per share of common stock were $1.77 and $2.40, respectively. Dividends of $1.50 per share of common stock were declared in both periods. Total coal output in the 1950 period was 3,137,811 tons, against 3,751,405 tons in the first half of 1949.

Pond Creek Pocahontas Co. and subsidiary companies reported a total net profit of $1,288,127, or $3.79 a share, for the first 6 mo of 1950. This compared with a total net of $1,526,369, or $4.50 a share, for the same period in 1949. Dividends were $2.00 a share for both periods. Total production in the first half of 1950 was 1,029,364 tons, slightly less than 9,000 tons more than in the first half of 1949.

Coal sales of Lehigh Navigation Coal Co., Inc., are up 11% from last year, it was reported recently by Robert V. White, president, The Lehigh Coal & Navigation Co., Inc., parent company. Sales in the first 6 mo of 1950 totaled 1,863,395 tons against 1,679,593 in the same period, 1949. "With the exception of small decreases in two industrial sizes, sales of all sizes of coal were either equal to or somewhat better than last year," Mr. White said. Sales of one industrial size were up 62%, he pointed out. The coal-producing and marketing subsidiary reduced its loss to $142,537 in the first half of 1950 from $514,638 a year ago. Consolidated net income for the parent company and its subsidiaries for the entire year of 1950 will be about $2,800,000 against $2,263,208 in 1949, he predicted.

Consolidated net profit of Pittsburgh Consolidation Coal Co. for the second quarter of 1950 was $4,177,183, or $1.94 per share, against $4,414,444, or $2.04 per share, for the same period in 1949. For the first 6 mo of 1950, earnings were $2.32 per share against $3.88 in the same period in 1949.

The Pennsylvania Coal & Coke Corp. has reported a consolidated net loss of $89,709 for the first 6 mo of 1950 against a net income of $117,211 in the same period, 1949.

The Philadelphia & Reading Coal & Iron Co. has reported net earnings for the first 6 mo of 1950 of $1,952,530, or $1.37 a share, compared with $1,630,066, or $1.14 a share, in the same period of 1949.

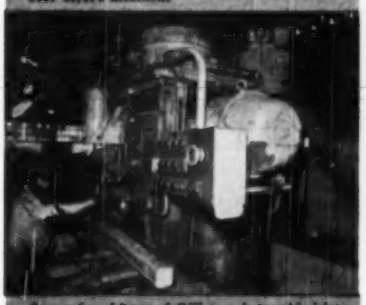
The Westmoreland Coal Co. reports that total tonnage for 1950 is expected to exceed that of 1949 and that its 1950 net income is expected to exceed its net of 1949, which was $605,476, or $4.03 a share. For the first 6 mo of 1950, net income was $380,581, or $2.54 a share, compared with $571,354, or $3.81 a share, in

For the toughest jobs in your plant . . . choose

THE TOUGHEST MOTORS EVER BUILT!

Reliance Type 'T' Splash-proof D-c. Motors provide dependable power for skip hoists in modern tube mills.

On continuous miners, specially designed Reliance Type 'T' D-c. Motors provide greater horsepower in the limited space available than ever before attained.



Power for chipper of fiberizer is provided by motor which is subject to recurring shock overloads. Protection and capacity, without excess weight, are obtained by use of force-ventilated Reliance Type 'T' D-c. Motor.

RELIANCE *TYPE 'T'* HEAVY DUTY D-C. MOTORS

Wherever motors must meet rugged service requirements, Reliance Type 'T' Heavy Duty D-c. Motors are right in their element! Designed, engineered and constantly improved to satisfy the requirements specified by users, these dependable motors have proved their amazing endurance in steel mills, in underground mines and in countless other industrial applications.

All-steel frames give maximum strength. Other features: thorough insulation of armatures and field coils by Reli-X varnish treatment; extra-strong commutators to assure capacity for overloads of current and speed; cast bronze brush holders to provide and maintain accuracy for peak performance; precision bearing design . . . "you can't grease 'em wrong". Write today for *new* Bulletin C-2001 containing complete data on these rugged, heavy duty Type 'T' D-c Motors available from 3/4 to 1000 horsepower for constant or adjustable speed.

Sales Representatives in Principal Cities

RELIANCE ELECTRIC AND ENGINEERING CO.

"Motor-Drive Is More Than Power" • 1084 Ivanhoe Road, Cleveland 10, Ohio

West Virginia gives you

6 ways to reduce coal mining costs

SWITCH STANDS—Tops in design, tops in service, tops in quality and variety.

TURNOUTS—Economical in use, economical in cost, easy to install and maintain.

STEEL TIES — Standard designs and weights. Save labor, save height, make good track.

RAILS—In ASCE sections and any lengths, high quality rail steel for durability.

PREFABRICATED TRACK—For permanent and temporary installations, easy to install.

ROOF BOLTS—The greatest forward step in safety and economy in mining in years.

Manufacturers of RAILS and ACCESSORIES TRACK WORK STEEL TIES

West Virginia Steel & Manufacturing Co.

Huntington, West Virginia

the first half of 1949.

The Pittston Co. has announced a net of $823,332, or $1.35 a share, for the first half of 1950, on operating revenues of $36,543,147. In the 1949 period, the net was $1,094,350, or $1.80 a share, on operating revenues of $40,446,849.

Net income for the Clinchfield Coal Corp. was $884,384, equal to $1.18 a share, for the first half of 1950. In the same period of 1949, its net was $957,555, or $1.28 per share.

For the fiscal year ending June 30, Ayrshire Collieries Corp. reported a consolidated net income of $1,219,249, equal to $2.14 a share, as compared with $2,843,233, or $5 a share, for the previous fiscal year.

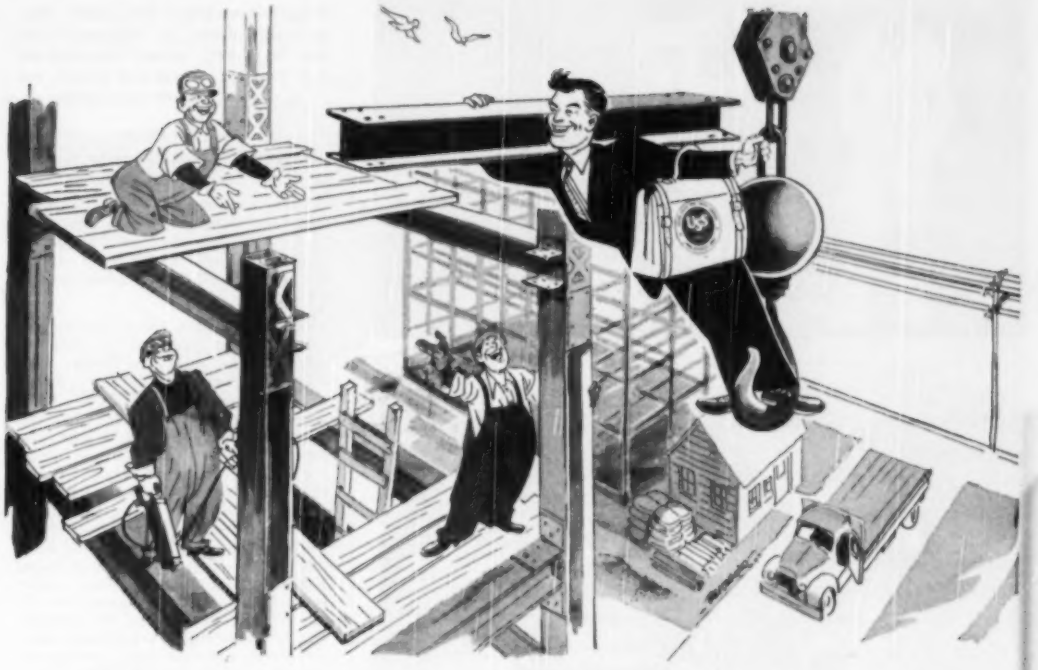
Coal Industry Sponsors 102 College Students

Coal companies and professional organizations in eight states currently are providing financial support to 102 college students who are studying mining or are from mining communities, according to a tabulation appearing in the last issue of *Bituminous Coal Research*, quarterly publication of BCR. The scholarships vary from $200 to $1,000 yearly and in some cases are restricted to employees or children of employees or to students from specific areas.

The sponsoring organizations and the total scholarships currently in effect are:

Colorado:	
AIME Coal Division	1
Illinois:	
Illinois Mining Institute	4
Peabody Coal Co.	4
Sahara Coal Co.	4
Kentucky:	
Blue Diamond Coal Co.	4
Consolidation Coal Co. (Ky.)	2
Fentress Coal & Coke Co.	4
Harlan Mining Institute	4
Inland Steel Co.	8
Princess Elkhorn Coal Co.	16
South-East Coal Co.	4
AIME Cen. Appalachian Sec.	1
New York:	
Henry Krumb	10
Pennsylvania:	
Imperial Coal Co.	4
Johnstown Coal & Coke Co.	4
Pittsburgh Coal Co.	8
AIME Coal Division	1
Utah:	
U. S. Fuel Co.	1
Utah Fuel Co.	1
Virginia:	
AIME Cen. Appalachian Sec.	1
West Virginia:	
Johnstown Coal & Coke Co.	4
Red Jacket Coal Corp.	2
W. Va. Coal Association	8
AIME Cen. Appalachian Sec.	1
AIME Coal Division	1

Detailed information on any of these scholarships may be obtained, it was reported, from: M. D. Cooper, director of mining engineering education, National Coal Association, 5430 Aylesboro Ave., Pittsburgh 17, Pa.



"Meeting Emergencies"... that's only one of the things we mean by Service Plus!

BARS · PLATES · FLOOR PLATE
STRUCTURALS · SHEETS
STRIP · REINFORCING BARS
• • •
STAINLESS
ALLOY STEELS
ALUMINUM
• • •
TOOLS · EQUIPMENT
MACHINERY

● Once in a while, a customer finds himself short of an essential piece of steel or equipment. That means delay, perhaps layoffs, if the item is not delivered immediately. And that is when *Service Plus* gets a severe test.

We're glad we have passed these important tests. Some customers have commented: "I like your prompt service." "You have fast and competent service." We hope our customers never find reason to change these opinions.

Service Plus means more than this. It specializes in courteous attention to your every requirement—it's our way of saying *we'll do all that is humanly possible to supply you with the type of steel you want... where you want it... when you want it.*

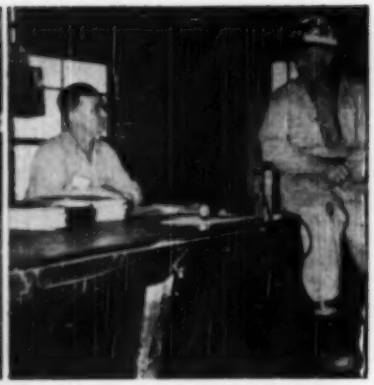
WHEN YOU DEAL WITH US, YOU GET Service Plus!

UNITED STATES STEEL SUPPLY COMPANY

USS

Warehouses and Sales Offices: BALTIMORE · BOSTON · CHICAGO
CLEVELAND · LOS ANGELES · MILWAUKEE · MOLINE, ILL. · NEWARK · PITTSBURGH
PORTLAND, ORE. · SAN FRANCISCO · SEATTLE · ST. LOUIS · TWIN CITY (ST. PAUL)
Sales Offices: INDIANAPOLIS · KANSAS CITY, MO. · PHILADELPHIA · ROCKFORD, ILL. · TOLEDO
TULSA · YOUNGSTOWN
Headquarters Offices: 208 S. La Salle St.—Chicago 4, Ill.

UNITED STATES STEEL



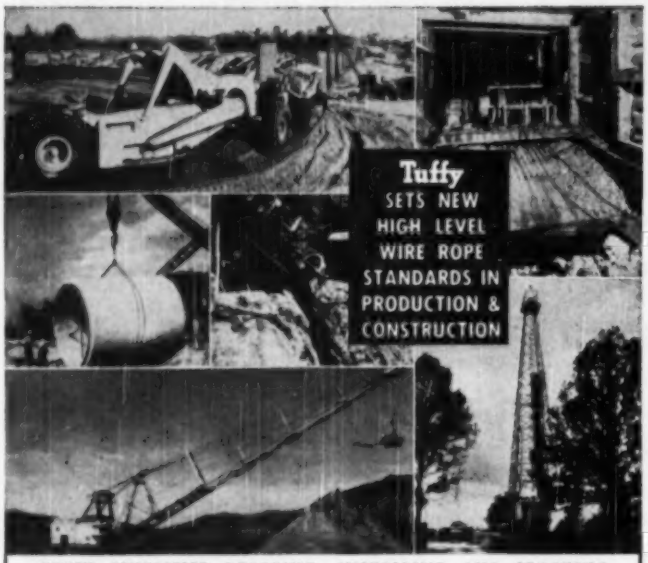
COAL MEN ON THE JOB

AT LEFT—GALLOWAY NO. 3 MINE, Simpson Creek Collieries Co., Galloway, W. Va.: Tom Perry (left), general superintendent; C. F. Carpenter, general mine foreman; and C. B. Richards, state mine inspector.

Association Activities

Eastern Bituminous Coal Association has made Clark E. Miller its traffic manager, effective Sept. 1. Mr. Miller formerly was freight agent, Pennsylvania R.R., Philadelphia and Uniontown.

Open Pit Mining Association elected the following officers at its sixth annual meeting in Terre Haute, Ind., July 14: president, John G. Price, chief electrician, Ayrshire mine, Ayrshire Collieries Corp., Oakland City, Ind.; vice president, George Reynolds, chief electrician, Morgan Mines, Inc., Herrin, Ill.; secretary, L. E. Briscoe, chief electrical engineer, Ayrshire Collieries Corp., Indianapolis, Ind. Also, the following directors were elected: J. J. Huey, United Electric Coal Cos., Chicago; Charles Bledsoe, Little John Coal Co., Galesburg, Ill.; J. C. Rettenmayer, Northern Illinois Coal Corp., Wilmington, Ill.; L. A. Selleg, Westinghouse Electric Corp., Chicago, and L. O. Sinderson, General Electric Co., Chicago.



TUFFY SIMPLIFIES ORDERING, INSTALLING AND STOCKING

The Tuffy family is designed for special purpose jobs—the toughest jobs any wire rope can be called upon to do. Not only are Tuffy special purpose ropes setting new high standards in production and construction service—they also simplify ordering, installing and stocking. Just the trademark name Tuffy, the size and length will bring you the ultimate low cost rope for these special purposes.

Tuffy SCRAPER ROPE
Test Tuffy's ability to handle extra yardage on the toughest scraper jobs. You'll change to Tuffy on your whole fleet!

Tuffy DRAGLINES
Put Tuffy Draglines to any test. Watch them come out on top with unequalled money-saving records. To order—just specify length, diameter and "Tuffy"!

Tuffy MINING ROPE
Union-formed for mining machine operations. Stronger, safer, withstand abrasion and crushing longer. Easy to handle—flexibility is built in!

Tuffy SLINGS
An entirely different, patented, interlaced wire fabric construction gives Tuffy Slings extraordinary stamina and flexibility. Factory fitted.

Tuffy ROTARY LINE
Designed for jackknife and standard rotary rigs, Tuffy Rotary lines are the choice in all well drilling operations for ultimate drilling economy.

Tuffy CHOKER
Wire rope specially stranded and socketed for extra strength, stamina, flexibility required in logging.

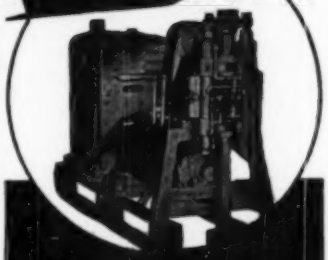
union Wire Rope corporation
2130 Manchester Ave., Kansas City 3, Mo.

Send information on:
- ☐ SCRAPER ROPE
- ☐ DRAGLINES
- ☐ SLINGS
- ☐ MINING ROPE
- ☐ CHOKERS
- ☐ ROTARY LINE

Tuffy

FIRM NAME
ADDRESS
CITY ZONE STATE

Diamond Core Drilling
CONTRACTORS



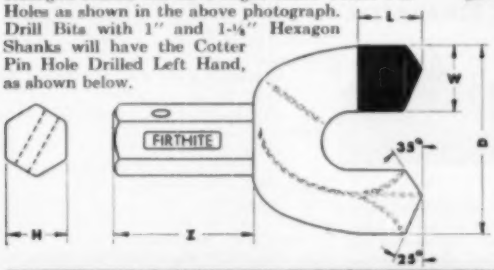
Testing mineral properties with our light gasoline drills. SATISFACTORY COAL CORES GUARANTEED. Ground solidification by our pre-pressure grouting method for shafts. Wet mine areas, horizontal holes for drainage. Electric drills for inside mine drilling.

MOTT CORE DRILLING CO.
HUNTINGTON • WEST VIRGINIA

HEX-SHANK AUGER DRILL BITS

A COMPLETE LINE OF SIZES
For shooting with Armstrong, Mirdon and Cardox Cylinders

Unless otherwise specified—Drill Bits with 13/16" Hexagon shanks will have Right Hand Cotter Pin Holes as shown in the above photograph. Drill Bits with 1" and 1-¼" Hexagon Shanks will have the Cotter Pin Hole Drilled Left Hand, as shown below.



Style No.	DIMENSIONS IN INCHES					
	Shank Sizes			Tip Sizes		
	D	H	Z	L	W	Thickness
D-2¼-13	2-1/4	13/16	2-1/4	7/8	3/4	5/32
D-2½-13	2-1/2	13/16	2-1/4	1	13/16	5/32
D-2¾-13	2-3/4	13/16	2-1/4	1	7/8	5/32
D-2¾-16	2-3/4	1	2-1/4	1	7/8	5/32
D-2⅞-16	2-7/8	1	2-1/4	1	15/16	5/32
D-3 -13	3	13/16	2-1/4	1	1	5/32
D-3 -16	3	1	2-1/4	1	1	5/32
D-3 -18	3	1-1/8	3	1	1	5/32
D-3½-18	3-1/4	1-1/8	3	1	1-3/32	5/32

Full line of SQUARE SHANK Firthite Auger Drill Bits in Auger Diameters ranging from 1¼" to 3¼"

NOW AVAILABLE FROM STOCK

Write, wire or phone your orders Today!

FIRTH STERLING DISTRIBUTORS

ATLAS SUPPLY & EQUIP. CO.
Clarksburg, W. Va.
Telephone 22231

AMOS A. CULP
Birmingham 4, Ala.
Telephone 34271-2

DIAMOND SUPPLY CO.
Evansville, Ind.
Telephone 48275

DUNLAP WELDING & SUPPLY CO.
Zanesville, Ohio
Telephone 2900

QUAKER SALES CORPORATION
Johnstown, Pa.
Telephone 51-241

PERSINGERS INCORPORATED
Charleston 27, W. Va.
Telephone 65341

PERSINGER SUPPLY CO., INC.
Williamson, W. Va.
Telephone 2121

UNION SUPPLY CO.
Denver 2, Colo.
Telephone ALpine 2091

Ask for catalog Section 90-000

Better DRILLING

One driller reported drilling 600—8-foot holes in coal—*"Without a regrind!"*

Faster DRILLING

One three-drill tram drilled 404—8-foot holes *in 7½ hours* in coal having heavy sulphur streaks!

Cheaper DRILLING

A minimum of bit change time requirement—more drilling finished per hour—better and faster drilling *is cheaper drilling.*

R-191

Firth Sterling STEEL & CARBIDE CORPORATION
McKEESPORT, PA.

AMERICAN CYANAMID
APPROVES STEARNS MAGNETIC SEPARATOR

FEATURES

- Lowered treatment cost due to highly efficient recovery
- Continuous, automatic recovery during fluctuating feed conditions
- No possibility of short circuits as air cooled magnet is suspended completely above water bath
- Test results indicate improved overflow weir action results in less media loss in overflow discharge
- Action of separator is visible to operator at all times
- Simplified operation
- Shipped complete, ready to install. No additional feeders or extensive piping necessary

AFTER completely satisfactory performance at the American Zinc Company plant at Mascot, Tenn., The American Cyanamid Company, as technical representative of the American Zinc, Lead & Smelting Company, has approved the STEARNS Type "MWI" Magnetic Separator for use in Heavy-Media plants. In operation in the Heavy-Media process in the concentrating of zinc ore, the STEARNS Type "MWI" Separator recovered better than 99.9% of the magnetic ferrosilicon.

The STEARNS Type "MWI" Magnetic Separator is equally adaptable for the recovery of media in Heavy-Media plants for the processing of all types of ores. This includes iron ores, fluorspar, rock products, coal, and similar materials. Specialized STEARNS Magnetic Separators are available for the recovery of other media such as magnetite.

Whether your problem is that of purification, reclamation, or concentration, STEARNS has a separator for you. From the fairly simple job of tramp iron removal to the concentration and beneficiation of complex ores, STEARNS has EXPERIENCE ENGINEERED equipment to meet your specifications.

Complete laboratory research facilities are available for thorough investigation of your separation problem. This includes a complete analysis of the practicability of applying magnetic separation, the testing of sample material, and the recommendation of specific magnetic separation equipment.

Stearns MAGNETIC MANUFACTURING CO.

661 S. 28th St., Milwaukee 46, Wis.

Bluefield Coal Show Reaches New High

(*Continued from p 142*)

buildings, metal fan ducts and explosion doors; slope, tunnel and shaft liner plates, culverts, asbestos-bonded pipe, quick-coupling portable pipe.

Ashland Oil & Refining Co., Ashland, Ky.—Mining fuels and lubricants, Permatreat dustproofing oils.

Baldwin Machinery Co., Charleston, W. Va.—Buda eigines and jacks, Thor Silver Line tools, Universal crushers, Crosby clips, Macwhyte rope, LeTourneau earth-handling equipment, Lorain shovels and draglines, Jaeger compressors and pumps, Canton Load Binders, Rome graders.

Barber-Greene Co., Aurora, Ill.—Barber-Greene slope and mine conveyors, and coal-handling equipment.

Barlow & Wisler, Bluefield, W. Va.—Winkler stokers.

Bashlor-Sowers Welding Service, Inc., Bluefield, W. Va.—Linde Air products, Haynes Stellite hard-facing rods, Purox cutting and welding equipment, Oxweld welding apparatus and supplies, Prest-O-Lite welding and cutting equipment and acetylene, Union carbide, Hobart welding equipment and rods, Oxygen Equipment cutting equipment, Puritan therapy gases.

Bearing Service Co., Pittsburgh, Pa.—Bearings of all types.

Bird & Son, Chicago—Roofing materials.

Black & Decker Mfg. Co., Towson, Md.—Industrial and automotive tools, including hand-held drills.

Blackhawk Mfg. Co., Milwaukee, Wis.—Black Hawk tools for production and maintenance.

Bluefield Hardware Co., Bluefield, W. Va. — Bemis Bros. Flexipipe Sherwin-Williams paints, P&C tools, Carlon plastic pipe, Dodge power-transmission equipment, Economy renewable-cartridge fuses, Allis-Chalmers motors, controls and transformers, Bethlehem roof-suspension equipment, Pyrene equipment, Wood shovels, Gemco track tools, Goodyear Coal-Flo belts, Myers pumps and water systems, Fafnir bearings, Eveready flashlights and batteries, Simons saws, Leschen wire rope.

Bluefield Supply Co., Bluefield, W. Va.—Bonney tools, York air-conditioning and ice machinery, and products of the following: Mosebach Electric & Supply Co., Johns-Manville Sales Corp., du Pont, Smith Welding Equipment Corp., Victualic Corp. of America, Ingersoll-Rand Co., General Electric Co., Link-Belt Co., Reardon Co., Ahlberg Bearing Co., True Temper Corp., Trumbull Electric Mfg. Co., Skilsaw Inc., Yale & Towne Mfg. Co., Oster Mfg. Co., Rubberset Co., York Corp., Morse Twist Drill & Machine Co., West Virginia Steel & Mfg. Co., Bursman Mfg. Co. and Steel Products Engineering Co.

Browning Mfg. Co., Inc., Maysville,

(*Continued on p 158*)

ALL ROPES *look* ALIKE... but

IN *Wickwire Rope*

TESTING GOES

Precision polishing and high powered magnification enable us to go 100 times beyond normal vision in examining Wickwire Rope steel for classification of grain size to McQuaid-Ehn* standards.

100 times beyond normal vision

Uniformity of grain size in steel assures longer life and greater reliability in Wickwire Rope.

Right down the line...starting with the melting and refining of our steel ...and continuing through heat treating processes and cold drawing of the wire, we maintain complete control over the grain size of steel used in Wickwire Rope.

This quality control of basic properties is possible only with a company whose operations are fully integrated from the actual making of the steel to the stranding of the finished rope. It's just one more example of how Wickwire goes "beyond specifications" to give you—at market prices—wire rope that is unsurpassed for reliability, safety and longer life.

See your local Wickwire distributor for the right rope for your particular requirements. Wickwire Rope is available in all sizes and constructions, both regular lay and WISSCOLAY *Pre*formed.

*For detailed information on the McQuaid-Ehn test and what it means to you in superior rope performance, write to Wire Rope Sales Office, Wickwire Spencer Steel Division of C. F. & I., Palmer, Mass.

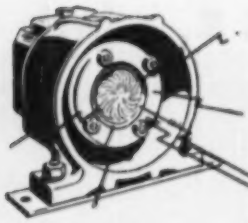
WICKWIRE ROPE CF&I

A PRODUCT OF THE WICKWIRE SPENCER STEEL DIVISION OF THE COLORADO FUEL AND IRON CORPORATION

WIRE ROPE SALES OFFICE AND PLANT—Palmer, Mass. EXECUTIVE OFFICE—500 Fifth Avenue, New York 18, N. Y.

SALES OFFICES—Abilene (Tex.)•Boston•Buffalo•Chattanooga•Chicago•Denver•Detroit•Emlenton (Pa.)•Philadelphia•Tulsa•Fort Worth•Houston•New York

PACIFIC COAST SUBSIDIARY—The California Wire Cloth Corporation, Oakland 6, California



How's Your Coal Control Today?

Modern mining the Femco way—by Trolleyphone—means constant control thru foolproof communication. It means push-button supervision—instant contact with every section of the mine, whether motormen on the move, or foremen at the face. Gives quick action, quick reports. Cuts stops, delays, accidents —and costs!

"For better Coal Control—Trolleyphone!"

- Ups production
- Brings savings
- Assures safety
- for greater profits

FARMERS ENGINEERING AND MANUFACTURING COMPANY

TROLLEYPHONE "It Speaks For Itself"

A New Locomotive Backed by 25 Years' Experience in the Battery Locomotive field!

GREENSBURG

'RANGER" STORAGE BATTERY

LOCOMOTIVES

All Locomotives CUSTOM-BUILT to your requirements.

FEATURES

Oil-tight, leak-proof transmission. Use regular auto oil; change every 6 months.

Strong. Simple. Low maintenance cost.

Extra-long journal springs assure better trackability.

Large motor, to assure more horse power per ton weight of locomotive.

Can be equipped with hydraulic brake.

This locomotive being used for main line haulage at the Blacksmith Coal Company, Novinger, Missouri. This is a 4½ ton locomotive, operating on 30" gauge track. This locomotive built from 3½ to 10 tons — either single or double motor drive — 16" to 56½" track gauge.

MORE HAULING FOR LESS STORAGE BATTERY CAPACITY

THE GREENSBURG MACHINE CO.

Makers of Custom-Built Storage Battery Locomotives

101 STANTON ST., GREENSBURG, PA.

Bluefield Coal Show

Ky.—Gripbelt and Griplink drives, malleable bushings, steel flexible couplings, new bush-type flexible coupling.

Busaman Mfg. Co., Greensboro, Ky. —Fustron dual-element fuses.

Roy C. Call Co., Charleston, W. Va. —GM diesel power.

Carter Motor Co., Bluefield, W. Va. —International-Harvester trucks.

Carboloy Co. Inc., Detroit, Mich.— Carboloy percussion drills, auger drills, cutter bits and finger bits.

Cardox Corp., Chicago — Airdox coal-breaking equipment.

Carnegie-Illinois Steel Co., Pittsburgh, Pa. — USS stainless steel screens and alloy steels.

Charleston Electrical Supply Co., Charleston, W. Va.—Allis-Chalmers pumps, Texrope drives, sheaves and transformers, Pure Carbon Co., brushes, Allen-Bradley motor controls, Falk gears, Prox cutter chains and bits, Continental-Diamond products, Chromalox heating elements, Ideal Industries electrical-maintenance equipment, Chicago Pneumatic drills and tools, Westinghouse products, Anaconda wire and cable, Youngstown Sheet & Tube Co. conduit, Stromberg-Carlson products, Buss fuses, Burndy electrical specialties, Weston instruments, Flexco belt fasteners, Crouse-Hinds Condulets, Bryant wiring devices, Eveready flashlights and batteries, Ohio Brass products, Deming pumps and water system, Cesco repair services, Minelites, Hubbell connectors, Joslyn line materials, Benjamin lighting equipment, Goodyear conveyor belt and mechanical goods, Thomas & Betts cable connectors.

Chicago Pneumatic Tool Co., New York—CP coal and rock drills and the new CP roof-bolting unit designed for both drilling and tightening bolts.

Cummins Diesel Sales & Service, Charleston, W. Va.—Cummins diesel engines, generator sets and maintenance service.

Diamond Chain Co., Inc., Indianapolis, Ind.—Diamond chains.

Joseph Dixon Crucible Co., Jersey City, N. J.—Dixon graphite, graphite lubricants and paints.

Duff-Norton Mfg. Co., Pittsburgh-Pa. Duff-Norton lifting and lowering jacks, hydraulic jacks, maintenance tools, gear and pinion pullers, and mine roof and timber jacks.

E. I. du Pont de Nemours & Co., Inc., Cleveland, Ohio—du Pont paints and finishes.

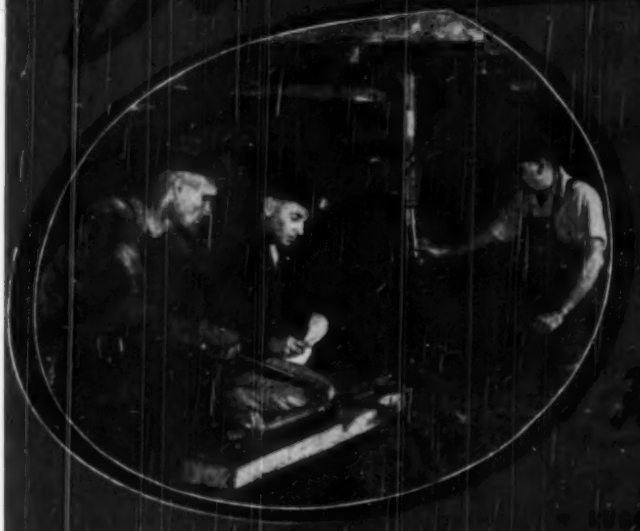
Duquesne Mine Supply Co., Pittsburgh, Pa.—Jack pipes, car stops and car holders, rerailers, derailers, tools, pins, links, overhead line materials, trolley harps and gliders, conveyor parts, trolley taps, new section switches, ribbon fuses, aluminum safety coupling hooks and special bolts for tough jobs.

(Continued on p 161)

Don't Guess!

DETERMINE YOUR ROOF BOLT Anchorage Easily—Quickly WITH THE CONTINENTAL MODEL RT-250 Roof Bolt Pull Tester

• RUGGED • PORTABLE • ACCURATE
CAPACITY 25 TONS



A glance at the dial on the Continental Roof Bolt "Pull Tester" will show whether your roof bolts are anchored and will hold the load desired.

A MUST FOR SAFETY CONTROL IN ANY BOLTED MINE

This New Continental DRILLRAM

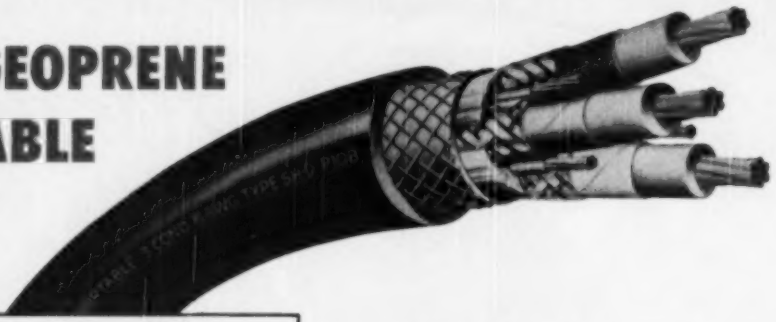
This Self-Propelled completely electric DRILLRAM with Hydraulic feed—the latest in Roof Drills—saves labor and time. Completely mobile. Try it in your mine!

INDUSTRIAL DIVISION
CONTINENTAL GIN COMPANY
BIRMINGHAM, ALABAMA

ENGINEERS CGC ATLANTA • DALLAS • MEMPHIS • NEW YORK CGC MANUFACTURERS

HERE'S EXTRA STRENGTH...EXTRA TOUGHNESS

GEOPRENE PORTABLE CABLE



Compare— and be convinced!

These figures, comparing ASTM requirements with typical G-E Geoprene values, indicate at once the superiority of portable cable with Geoprene sheath:

ORIGINAL	ASTM REQUIREMENTS	GEOPRENE TYPICAL VALUES
Tensile strength, lb/sq in.	1800	3000
Per cent elongation	300	500
Set in 2-in. test piece, in.	3/8	1/16
After 7 days in Geer oven at 70C		
Tensile strength, lb/sq in.	1600	2900
Per cent elongation	250	430
After 96 hrs. in oxygen bomb at 70C		
Tensile strength, lb/sq in.	1600	2800
Per cent elongation	250	430
After 18 hrs. in oil at 121 C		
Per cent depreciation in tensile strength	40	35
Per cent depreciation in elongation	40	35
Tear Test		
Tensile strength, min. lb/in.	40*	75

*This is the requirement for rubber jackets; no tear value has yet been set for neoprene-type jackets.

Look to G-E wire and cable for continuing progress toward
MORE TONS PER MACHINE PER DAY
Investigate these famous G-E cables for big returns in mining operations
Mine power cable insulated with Super Corona* . . . Versatol*-Geoprene portable cable . . . Bore hole cable . . . Varnished cambric cable . . . Locomotive cable . . . Flamenol* mine telephone cable . . . Shot firing cord . . . Deltabeston* power cable and magnet wire
*Registered Trade Mark of General Electric Company

A portable cable whose jacket has much higher tensile strength than required by ASTM standards . . . more than twice the tear resistance of older-type jackets—that's General Electric Geoprene portable cable!

Give G-E Geoprene cable the hardest possible service—bury it under rock falls, maul it with heavy equipment, drag it behind mining machines, wind it off and on reels repeatedly—it's made to outlast cable made with natural rubber. And, at the same time, you'll get sizeable savings in replacement costs over types of cable that won't stand up under rough treatment.

Tough, cable-laid twine under the outer Geoprene sheath gives G-E portable cable additional strength. An inner jacket cushions conductors against hard knocks and operating abuses. And because high-voltage Geoprene portable cable is built to permit continued operation at 75 C, you can use sizes that are smaller, less bulky than otherwise possible.

Available in a wide range of sizes and with two, three, or four conductors, G-E Geoprene cable resists heat, sunlight, abrasion, oils, acids, alkalies, and flame. To find out about these and other advantages that this cable provides, write Section W18-914, Construction Materials Department, General Electric Company, Bridgeport 2, Conn.

GENERAL ELECTRIC

COAL MEN ON THE JOB

CLIVE "BUCK" HARRIS, pit superintendent, Tecumseh Coal Corp., Boonville, Ind.

Bluefield Coal Show

Electro-Nite Carbon Co., Philadelphia, Pa.—Carbon brushes and carbon products.

Elreco Corp., Cincinnati, Ohio—Overhead line materials, trolley taps cable cushions and the new inverted trolley (July, 1950, *Coal Age*, p. 101).

Ensign Electric & Mfg. Co., Huntington, W. Va.—Ensign cable racks; dust-tight, permissible and three-step distribution boxes, B-M-approved button stations, line connectors, centrifugal-switch interlocks, cable splicers, trolley-guard supports, safety belt controls, dust-tight shuttle-car distribution boxes, special coal-drill boxes, Ensign-Clark explosion-tested and magnetic starters, H.B.E. conveyor-belt "Hesitators."

Enterprise Wheel & Car Corp., Bristol, Tenn.-Va.—Low-height endgate mine cars.

Erico Products, Inc., Cleveland, Ohio—Rail bonds and welders, Cadweld bonding and cable splicing, including splicing of two-conductor Type G or W cables.

Esso Standard Oil Co., Bluefield, W. Va.—Esso fuels and lubricants.

Farmers Engineering & Mfg. Co., Pittsburgh, Pa.—Femco trolleyphones.

Firth Sterling Steel & Carbide Corp., McKeesport, Pa.—Firthite cutter bits, auger drills, rotary roof-bolting bits, finger bits, four-point percussion bits, twisted-shank augers, auger drill-bit drivers, auger adapters and drive sockets.

Flexible Steel Lacing Co., Chicago—Flexco belt fasteners, Alligator belt lacers and V-belt fasteners.

Gardner-Denver Co., Quincy, Ill.—Pneumatic drills, pumps, water systems air compressors.

Gates Rubber Co., Denver, Colo.—Gates V-belts and sheaves, air and water hose, rubber-lined pipe and fittings, and rubber face plates for

(*Continued on p* 162)

Under this Coal is a SECO VIBRATING SCREEN

SECO
TRUE CIRCULAR ACTION
VIBRATING SCREENS

THIS BABY CAN
AND IS TAKING IT!

For over 4 years this single-deck Seco scalping screen has been faithfully removing the lump from R. O. M. in a Kentucky coal mine.

Today it operates with the same smoothness and efficiency as when first installed and will continue to deliver this kind of performance for many more years.

Why not check Seco for your coal screening requirements.

SEND FOR BULLETIN
#11, Dept. CA-9

SECO Vibrating Screens

SCREEN EQUIPMENT COMPANY, INC.
BUFFALO 21, NEW YORK

In Canada: United States Steel Corp. Ltd., Toronto, Ont.

AMERICAN

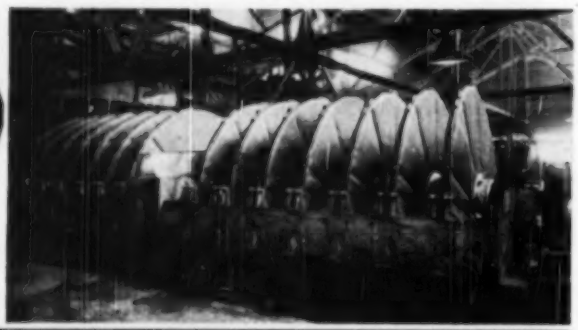
CONTINUOUS FILTER

No Bothersome BUILDUP Here!

Let's say you are planning to install equipment to remove fines (coal and/or silt) from the water in your plant system. You want to discharge water from the plant or re-circulate it.

If you are re-circulating, too many solids will give a bothersome buildup. If you are discharging into a stream you must stay below the permissible solids content. The American Filter serves your requirements in either case. Actual operating production records show filtrate of American Filters carries less than 1% solids on the average. One plant with a pilot American Filter averages close to 1/10 of 1% solids in filtrate.

The American keeps solids to a minimum.



OLIVER UNITED FILTERS INC.

New York—
33 West 42nd Street

Chicago—
221 N. La Salle Street

San Francisco—
260 Calif. St.

Oakland—
2900 Glascock Street

Export Sales Office—New York

Cable—OLIUNIFILT

Factories: Hazleton, Pa. • Oakland, Calif.

Bluefield Coal Show

chutes, spouts and the like.

General Electric Co., Schenectady, N. Y.—Mine and general lighting, EWF resistors, heating cable, hook-on wattmeters, new dc mine motors, wire and cable, and the Left Fork Fuel Co. mine power skids.

Gerdetz Equipment Co., Bluefield, W. Va.—Clarkson Redbird Uni-flight chains, Armstrong coal-breaking equipment, Aquadyne wetting compound and feeders, Fyr-Fyter equipment, Victaulic couplings and full-flow fittings, Sterling castings and cast-steel wheels, Stamler hydraulic car spotters.

Goodman Mfg. Co., Chicago—One-man hydraulic jacks for shakers, belt conveyors, column-type trough for shaker conveyors, Star aluminum jacks, Goodman repair parts.

B. F. Goodrich Co., Akron, Ohio—Conveyor belts, V-belts, hose and other rubber products.

Gorman-Rupp Co., Mansfield, Ohio—All type of mine pumps.

Green, Tweed & Co., N. Wales, Pa.—Palmetto packing.

Gulf Oil Corp., Pittsburgh, Pa.—Mining lubricants.

Guyan Machinery Co., Logan, W. Va.—Mine fans, bond welders, locomotive and machine resistance, dc starters, heaters, chokes, Sky-Line plastic pipe, Throwaway Bit Corp. detachable bits, trolley nips, foot-valve strainers, locomotive headlights and resistors, air-flow indicator switches.

Harris Pump & Supply Co., Pittsburgh, Pa.—Peerless pumps.

Hazard Insulated Wire Works, Wilkes-Barre, Pa.—Hazard mining and borehole cables.

Hendrick Mfg. Co., Carbondale, Pa.—Screens, grills, steel flooring.

Huntington Supply & Equipment Co., Huntington, W. Va.—Products of the Tool Steel Gear & Pinion Co., Cincinnati Mine Machinery Co., Nolan Co. and the American Abrasive Metals Co.

Ideal Industries, Inc., Sycamore, Ill.—Electric-Maintenance tools.

Industrial Products Co., Pittsburgh, Pa.—Ware Hi-Lag fuses.

Ingersoll-Rand Co., Phillipsburg, N. J.—Jackhamers, impact wrenches and tools.

I-T-E Circuit Breaker Co., Philadelphia, Pa.—Automatic-reclosing circuit breakers, load centers and substations.

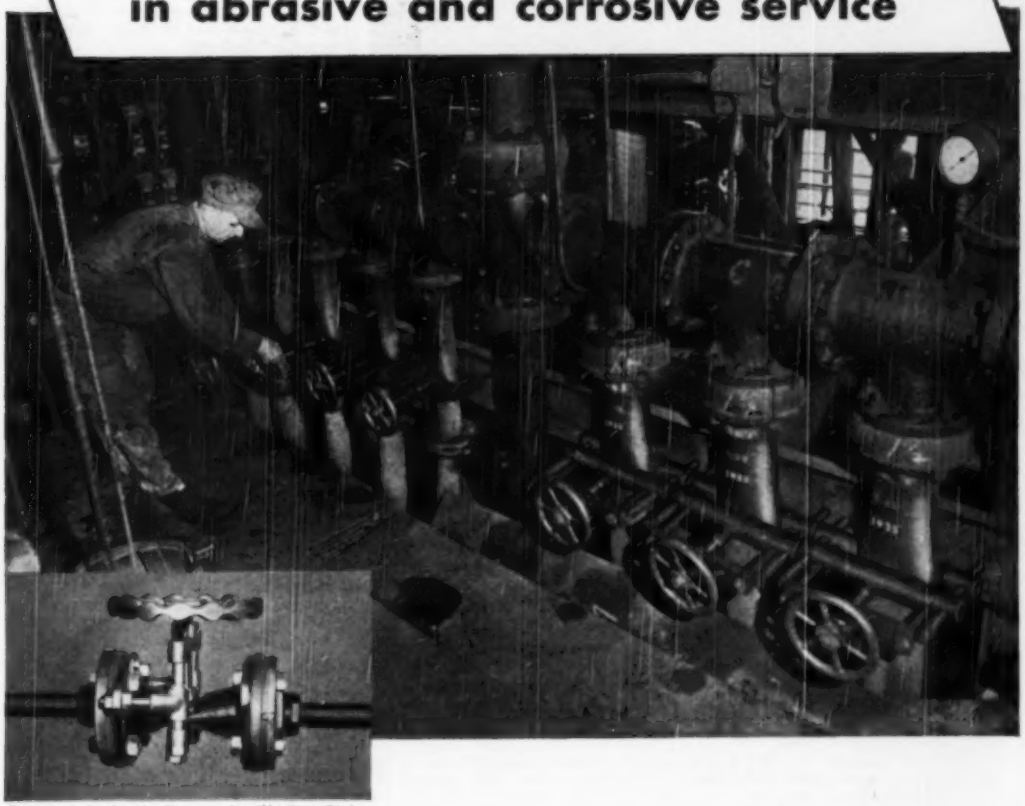
Jeffrey Mfg. Co., Columbus, Ohio—Jeffrey bugduster, A-7 hand-held drill, locomotive and motor controls, repair parts, Aerodyne fans.

Johns-Manville Sales Corp., Charleston, W. Va., and Cincinnati, Ohio—Building and construction materials, Transite pipe, packings and gaskets, electrical materials, friction materials.

Jones & Laughlin Steel Corp., Pittsburgh, Pa.—Steel pipe, Otiscoloy and Jalloy steels, structural products, wire rope.

(*Continued on p* 164)

NEW FLEXIBLE VALVE OUTWEARS METAL
in abrasive and corrosive service



Pinch valve in closed position. Sizes range from 1½ inches to 8 inches

Above you see a series of "U. S." rubber pinch valves controlling the flow of water containing abrasives in a Pennsylvania coal preparation plant. Many of them have been in continuous operation for 15 years. In the inset is the *newest* in the U. S. Rubber family of pinch valves.

This new pinch valve, developed by United States Rubber Company technicians, outwears metal when installed in pipe lines carrying abrasive or corrosive mixtures. Its flexibility offsets misalignment in pipes, absorbs vibration, breaks up galvanic action in pipes, eliminates "water hammer" and offers a positive seal in a closed position. The metal parts of the valve can be refitted to new valve bodies, thereby reducing replacement costs.

These "U. S." pinch valves are available in abrasive and corrosive-resistant compounds, neoprene for oil resistance, butyl rubber for high heat and severe acid conditions and pure gum stock for food and beverage conveyance. Design of the valve is very compact, retaining rings and pinch valve body in one unit, an advantage for installations where space is limited. Write to address below.

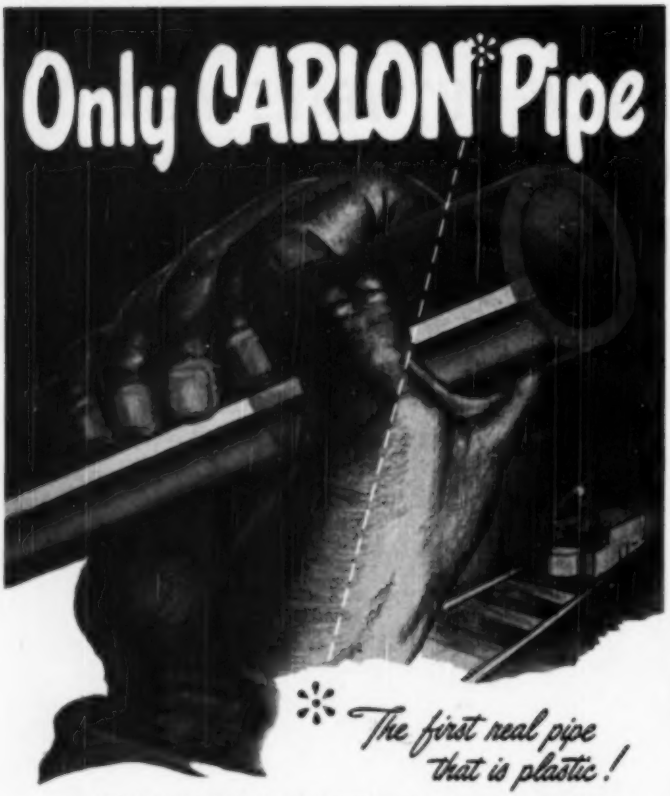
A PRODUCT OF

U.S.RUBBER
SERVING THROUGH SCIENCE

UNITED STATES RUBBER COMPANY

MECHANICAL GOODS DIVISION • ROCKEFELLER CENTER, NEW YORK 20, N. Y.

Only CARLON* Pipe



The first real pipe that is plastic!

ONLY CARLON PLASTIC PIPE combines the features of flexibility, light weight, absolute corrosion resistance, durability, low-cost installation, and long service life to solve your mine piping problems. This new pipe has been developed to handle sulphurous waters, alkalis, and metallic salts, and it has a projected, trouble-free service life many times that of metal pipe.

FLEXIBLE CARLON "E" PIPE follows entry direction and conforms to irregular surface contours. Furnished in lengths up to 400 feet, depending upon diameter, CARLON pipe eliminates many fittings required by other mine pipe. It can be installed quickly and easily, even under adverse conditions, for both permanent and temporary operations.

CARLON "E" MINE PIPE is **guaranteed** against rot, rust, and electrolytic corrosion. Operational tests have proven that CARLON cuts installation, maintenance, and replacement costs to minimum. In one of the country's largest mines, for example, an installation of CARLON "E" has been in continuous service for over 2 years with no signs of wear or deterioration from handling highly corrosive mine water. The Supgrintendent of this mine estimated that iron pipe in this installation would have been replaced at least **seven** times during the same interval.

Specify the Pipe with the Stripe!

CARLON "E" PIPE

NOM. PIPE SIZE	O.D.	I.D.	EST'D B.P. P.S.I.	WT. PER FT.	NORMAL SHPG. LENGTHS
½"	0.840	0.622	340	0.10	400 ft. coils
¾"	1.050	0.824	350	0.14	400 ft. coils
1"	1.310	1.070	300	0.18	300 ft. coils
1¼"	1.660	1.380	300	0.27	300 ft. coils
1½"	1.900	1.610	300	0.32	250 ft. coils
2"	2.375	2.070	170	0.44	200 ft. coils
3"	3.504	3.070	165	0.91	100 ft. coils
4"	4.504	4.030	150	1.25	25 ft. str.
6"	6.630	6.070	115	2.23	25 ft. str.

Identification Stripe YELLOW—Standard Pipe
RED —Heavy-duty Pipe

CARLON CP

Write For Catalog

CARTER PRODUCTS CORPORATION
10224 MEECH AVE.
CLEVELAND 5, OHIO

Bluefield Coal Show

Kanawha Mfg. Co., Charleston, W. Va.—Preparation equipment and services, Kanawha-Belknap calcium-chloride washer.

Kennametal, Inc., Latrobe, Pa.—Bits for coal cutting and drilling, rock drilling and roof drilling, including hitch-drilling unit.

W. R. Keesee & Co., Inc., Bluefield, W. Va.—Dodge Power Wagons.

Kersey Mfg. Co., Bluefield, W. Va.—Kersey battery-powered coal tractors, timber and supply trailers and utility units suitable, among other things, for roof-drilling—two-shift battery power, two stoper mountings, dust collection and water storage.

Keys Planing Mill Co., Bluefield, W. Va.—Building materials.

Koppers Co., Wood Preserving Div., Pittsburgh, Pa. — Pressure-treated wood, Ar-moored ties.

LeRoi Co., Cleveland Rock Drill Div., Cleveland, Ohio—Complete line of short stopers, reverse-air-feed sinker drills, light wagon drills new shaft-sinking unit, hand-held tools, new rubber-tired self-propelled roof-bolting jumbo with two stopers and dust collectors.

Link-Belt Co., Chicago—Float-and-sink concentrators, coal-handling and dumping equipment, CA vibrating screens, belt-conveying equipment, power and conveyor chains, fluid drives, new Moto-gear drives, PIV variable-speed drives, speed reducers.

Long Super Mine Car Co., Inc., Fayetteville, W. Va.—Chain-type mine conveyors, Superflite chains and the Long Piggyback conveyor (August, 1950, *Coal Age*, p. 70).

Marathon Coal Bit Co., Inc., Montgomery, W. Va.—Marathon throw-away bits, Timken rock bits, Carboloy cutter bits, McLaughlin tapered drill bits, Unionmelt tire welding, Stream Power pneumatic tools, Marathon internal-grinding attachment, coal augers.

Marshall Equipment Co., Inc., Beckley, W. Va.—Phillips Mine & Mill Supply products, Prox Precision chains and bits, Mining Machine Parts replacement parts, Syntron products.

May Office Service, Beckley, W. Va.—Office machines.

McLanahan & Stone Corp., Hollidaysburg, Pa.—Bantam Buster coal crusher.

Mercer Equipment Co., Bluefield, W. Va.—Motor-truck equipment.

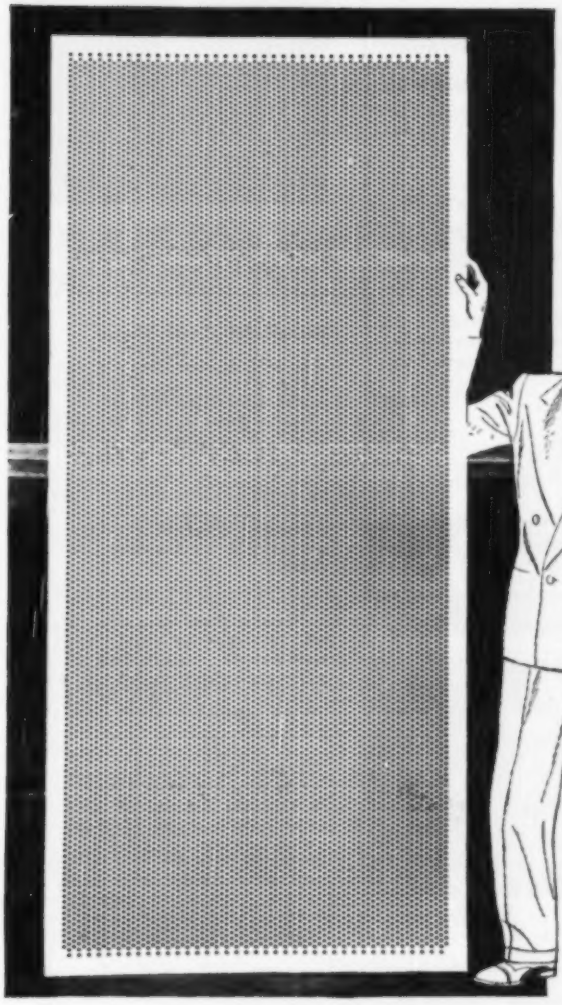
Mercer Garage, Inc., Bluefield, W. Va.—Ford industrial power.

Mine Safety Appliances Co., Pittsburgh, Pa.—M-S-A mine communication system, speaking diaphragm for rescue work, demand and Pneophor demand apparatus for resuscitation, R-4 cap lamps, Velocity Power tools, rock dusters, rescue apparatus, protective clothing, masks, respirators, first-aid materials, gas detectors, gas indicators and gas recorders, new permissible 10-shot blasting unit op-

(*Continued on p* 166)

Made for extra-long preparation plant service

—it's U·S·S Stainless Steel



EVERY DAY, more preparation plant men are finding in U·S·S Stainless Steel the answer to one of their toughest problems: how to increase the life and efficiency of screens.

The usual causes of screen failure—corrosion, abrasion and "blinding"—have little effect on Stainless Steel. Consequently, many mine owners have reported they are getting up to 10 times as much service from Stainless screens as from less efficient materials.

This extra-long service not only means lower material costs. Fewer shutdowns for repairs and maintenance mean reduced labor costs, too, and can increase the tonnage of the entire preparation plant.

Suppliers of perforated coal screens can furnish the grade of U·S·S Stainless best suited to your operations . . . in whatever type and size perforation or wire screen you require. U·S·S 12 Stainless Steel will handle most preparation plant jobs . . . extremely corrosive conditions may call for U·S·S 18-8.

Send for our free booklet

Complete details on the savings made possible by U·S·S Stainless Steel Screens—backed up by reports from more than a dozen preparation plant operators—are included in the booklet "More Output in Preparation Plants at Less Cost with U·S·S Stainless Steel Screens." For your copy, write to United States Steel Corporation Subsidiaries, 2156 Carnegie Building, Pittsburgh 30, Pa.

• • •

This 42" x 96" perforated screen is fabricated from 16 gage U·S·S Stainless Steel. The round holes are ½" diameter.

AMERICAN STEEL & WIRE COMPANY, CLEVELAND · CARNEGIE-ILLINOIS STEEL CORPORATION, PITTSBURGH
COLUMBIA STEEL COMPANY, SAN FRANCISCO · NATIONAL TUBE COMPANY, PITTSBURGH · TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM
UNITED STATES STEEL SUPPLY COMPANY, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST · UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS

U·S·S STAINLESS STEEL

SHEETS · STRIP · PLATES · BARS · BILLETS · PIPE · TUBES · WIRE · SPECIAL SECTIONS

O-1564

UNITED STATES STEEL

Mr. Operator, do you know that—

SYNTRON

provides complete flexibility of operation, individual controls for each machine, and/or a master control to operate all machines simultaneously?

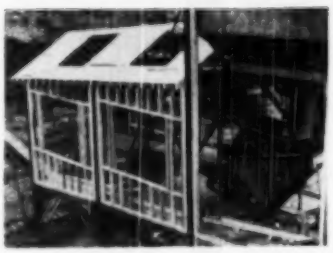
VIBRATING SCREENS
are compact, flexible, efficient. Provide controllable feed as they screen.

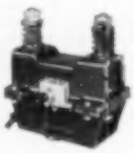
VIBRATING GRIZZLIES
provide coarse sizing operation—bypassing fines, etc.—and controllable feed.

VIBRATING PICKING TABLES
move coal smoothly and evenly forward at controllable rate—for easy hand picking — and for feeding crushers, belts, screens, etc.

ANOTHER
ON-THE-JOB
REPORT

VIBRATORY FEEDERS
provide a dependable, controllable flow of coal to screens, crushers, belts, etc.





ELECTRIC VIBRATORS
assure a steady, dependable flow of coal on surge bins, hoppers, chutes, etc.

HERE'S HOW—AT VERY LOW COST—a Western Pa. coal operator successfully met market requirements for a prepared product by applying Syntron Dual-purpose Screens, Picking Tables and Vibrators—all equipped with variable control of power to provide for instant and easy change to correspond with changes in the feed and for selecting the rate of flow.

The raw coal bin, kept free-flowing by a Syntron Vibrator, feeds to a Syntron Screening Feeder, which both bypasses fines onto belt conveyor below and feeds onto first Syntron Picking Table. This operator uses two Picking Tables for additional pickers—permitting smaller openings in the first Screening Feeder that results in higher percentage of coal passing across the tables. From the second Picking Table the coal is chuted down to belt and carried to double deck Screening Feeder located above railroad tracks where it's classified into sized, undersize and oversize products. (Note: Photo shows incomplete construction.)

Write for data

SYNTRON CO.
975 Lexington Ave.
Homer City, Penna.

COAL MEN ON THE JOB

BEECHKNOB MINE, Beech Knob Coal Co., Clearco, W. Va.; Curtis Small (left), foreman; and E. L. Roder, general manager.

Bluefield Coal Show

erated off cap-lamp battery, and new portable rubber-tired bolt-hole cleaner for use in roof-drilling.

Morse Twist Drill & Machine Co., New Bedford, Mass.—Metal drills.

Mosebach Electric & Supply Co., Pittsburgh, Pa.—Grease-type brake adjuster, shock absorber for mining cables, clamp-type trolley taps, pole hardware, overhead line materials, safety and sectionalizing switches, bonds.

National Electric Coil Co., Columbus, Ohio—National coil service.

National Mine Service Co., Beckley, W. Va.—Joy roof-bolting unit with dust collector, stopers, mine air compressors, roof-bolting bits and augers, Sulmet bits, hydraulic roof-bolting jib with chain-feed stoper; Joy-Mines Stringalite, Safety Circuit Centers, cable connectors and cable vulcanizers; Wheat Forty-Niner cap lamps, Koehler flame safety lamps, Bemeco "Cole" drill elevator for roof bolting; Bemeco brush holders, intermediate gears, locomotive reels and other locomotive equipment; Hayden belt cutters, repair service and Hayden-Nilos belt-splicing equipment; N-M-S repair service, repair and replacement parts, locomotive headlights, controllers, poles, bases, heads and harps, coils, Universal trolley-wire splicers, cable guides, and other products and services.

National Tube Co., Pittsburgh, Pa.—USS pipe and tubing.

Newcomer Products, Inc., Latrobe, Pa.—NP-series cemented carbide machine bits, twisted drill bits and finger bits.

Ohio Carbon Co., Cleveland, Ohio—Motor brushes.

Osmose Wood Preserving Co. of America, Inc., Buffalo, N. Y.—Osmose wood preservation, Osmose wood pins

(Continued on p 168)

The world's fullest market basket naturally takes the shape of America. For that fact thank *industry* — steel mills and textile mills, paper mills and oil wells, machine tool plants and tractor plants, every place where wheels turn and men work. Wheels turn faster and men work more efficiently in *every* industry because of anti-friction bearings. And every industry knows and uses SKF Ball and Roller Bearings. Every industry knows SKF as pioneers. Every industry knows that SKF engineering anticipates their needs for exactly the right bearing to do the job at hand. **SKF** INDUSTRIES, INC., PHILADELPHIA 32, PA., *the Pioneers of the Deep-Groove Ball Bearing, Spherical Roller Bearing, Self-Aligning Ball Bearing.*

7031

HELPING MAP OUT *America's*
276-BILLION DOLLAR MARKET BASKET

Operator of Preparation Plant says . . .

"We have been using 3/32-inch round hole stainless steel screens for dewatering and desanding on bottom decks of shakers.

"We feel that sooner or later all preparation plant operators will use stainless steel screens for dewatering and desanding because of its better resistance to corrosion and abrasion, because it maintains its hole size, and because of the labor savings afforded by the increased life obtained."*

That's the story in a nutshell—perforated stainless steel gives the most efficient and economical service!

To meet the varying requirements of different preparation plants, Hendrick furnishes perforated stainless steel in an unsurpassed range of shapes and sizes of perforations. Write for full information.

*From U. S. S. Stainless Steel Screens

SEE OUR CATALOG IN SWEET'S

HENDRICK
Manufacturing Company
41 DUNDAFF STREET, CARBONDALE, PENNA.
Sales Offices In Principal Cities

Perforated Metals
Perforated Metal Screens
Wedge-Slot Screens
Mitco Open Steel Flooring
"Shur-Site" Treads and Armorgrids

Save time Cut Costs

. . . it's Le Roi-CLEVELAND Stopers in *91* out of *103* coal mines

Yes, according to an official report 91 out of 103 mines in one of the country's leading coal-mining areas use Le Roi-CLEVELAND Stopers. Here's why these favorites are your best choice:

- The only complete range of sizes to meet every mining condition including special short-leg stopers for low coal.
- Fast drilling and easy to handle.
- Trip rotation that permits drilling and driving roof bolts with same stoper.
- Designed and built to stay underground where they're needed to keep your costs down.

Le Roi-CLEVELAND pioneered and perfected roof-bolting stopers. Write us today for information about these cost-cutting machines.

LE ROI COMPANY
CLEVELAND DIVISION • Manufacturers of CLEVELAND ROCK DRILLS
CLEVELAND 11, OHIO • New York • Washington • Birmingham
Milwaukee • Tulsa • Buffalo • San Carlos

Bluefield Coal Show

for pin timbering.

Oster Mfg. Co., Cleveland, Ohio—Pipe-threading machines.

Pattin Mfg. Co., Marietta, Ohio—Mine roof bolts, tanks, pressure vessels, steel fabrication.

Persingers, Inc., Charleston, W. Va.—American Steel & Wire cable, Ames Red Edge shovels, Bethlehem Steel ties and roof bolts, Carver gasoline pumps, Chicago Pneumatic coal drills and impact wrenches, Cutler-Hammer controls, Elreco line materials, Firthite carbide tools, P&H diesel engines, welders and accessories, Alemite lubricating equipment, Yale hoists, Black & Decker tools, Hartzell fans, Simplicity screens, Quaker Rubber belting and hose, Koehring Kwik-Mix concrete mixers, Nortons grinding wheels, Reliance motors and gears, Simplex jacks, Timken rock bits, Yardley plastic pipe, Gates V-belt drives, Schramm compressors, Albert & J. M. Anderson Pow-R-Gard distribution boxes, including new low-height types.

Persinger Supply Co., Williamson, W. Va.—Apco Master turbine-type pumps, Viking hot-oil dustproofing systems, Cone Drive reducers, Timken bits, Victaulic couplings and full-flow fittings, Chicago Pneumatic hand tools, Dings Magnetic equipment (feeders, tramp-iron pulleys and magnets, etc.), Cedarapids conveying equipment, Bethlehem Steel ties, Jacuzzi water systems, Dodge Torque-Arm speed reducer and power-transmission equipment, Taper-Lock V-belt sheaves, Hartzell fans, Krider crushers, Elreco junction and distribution boxes, Carver pumps, Webb scales, air-conditioning equipment, ball-bearings, etc.

Plomb Tool Co., Los Angeles, Calif.—Proto tools.

Post-Glover Electric Co., Cincinnati, Ohio—P-G registers, welders and transfer switches.

Precision Chain Co., Terre Haute, Ind.—Prox Precision cutter chains and bits.

Princeton Foundry & Supply Co., Princeton, W. Va.—Macwhyte wire rope, Perfection cone-stove sand drier, gray-iron castings and alloys.

Provident Life & Accident Insurance Co., Chattanooga, Tenn.—Employee accident, health and life insurance.

Quaker Rubber Corp., Philadelphia, Pa.—Quaker rubber belting, hose and other mining products, including Qua-Lastic trolley guard.

Reardon Co., Bayonne, N. J.—Paints and surface repair and maintenance products.

Reliance Electric & Engineering Co., Cleveland, Ohio—Reliance m-g sets, Precision-Built motors, V-S variable-speed drives.

Rish Equipment Co., Bluefield, W. Va.—Disston chain saws, Wonder concrete mixers, International Harvester tractors and power units, Barber-

(*Continued on p.* 170)

Capacity means nothing when your loader is down

We at Myers-Whaley have devoted our entire engineering ability to building loading machines exclusively for over 40 years. We believe we know the requirements that make mechanical loading effective and profitable. These requirements have been built into the Whaley "Automat." Along with low power consumption . . . safe operation, we have big capacity. But capacity means nothing when your loader is down. Most important, we have built vitality . . . endurance . . . and ability to stay on the job into the "Automat."

The simplicity of the "Automat" is your guarantee of more consistent loading, in any class of materials, hour after hour every day, week-in, week-out.

Write for our new Catalog 250 giving you every detail of this fine machine. Myers-Whaley Co., Knoxville, Tenn.

MYERS-WHALEY

"MECHANICAL LOADERS EXCLUSIVELY FOR OVER 40 YEARS"

For Top Flight Gas Welding

Choose from AIRCO'S complete line of

Oxyacetylene Welding Supplies

Time Proved . . . Job Tested . . . Money Saving

Available from Local Stocks

That's right! Whether you use a popular Airco gas welding rod, flux, or brazing alloy for production or maintenance operations . . . you're certain of top-notch work—ask any one of the thousands of welders who swear by these Airco oxyacetylene welding supplies.

This well-recognized reputation for top performance didn't just happen—more than thirty years' experience and development have gone into the manufacture of these outstanding gas welding supplies . . . know-how that produces high quality, reasonably-priced items that guarantee a job done faster, done better, done easier and done at less net cost.

For further information about Airco's oxyacetylene welding supplies which includes a complete line of rods, fluxes and brazing alloys, write your nearest Airco office or Authorized Dealer for a free copy of Catalog 12.

AIRCO **AIR REDUCTION**

Offices in Principal Cities

Headquarters for Oxygen, Acetylene and Other Gases . . . Calcium Carbide . . . Gas Cutting Machines . . . Gas Welding Apparatus and Supplies . . . Arc Welders, Electrodes and Accessories

Use *FLEXIPIPE* . . . the quality ventilating tubing

FLEXIPIPE

Directs fresh air where you need it

The new improved Flexipipe is efficient, serviceable and economical. It's made in a variety of diameters and lengths and with various accessories to take care of your individual requirements. Write us for complete information and sample.

BEMIS BRO. BAG CO.

413 Poplar Street, St. Louis 2, Mo.

FLEXIPIPE: Reg. U.S. Pat. Off.

COAL MEN ON THE JOB

DAVIS COAL & COKE CO., Coketon, W. Va.: Clarence Paugh (left), maint. supt.; and E. L. Hemmingway, gen. supt.

Bluefield Coal Show

Greene conveyors, McCarthy coal-recovery augers, McCarthy coal and rock drills, Adams graders, Hough Payloaders, P&H shovels, Euclid trucks, Quaker Rubber conveyor belting, CMC pumps and mixers, Gorman-Rupp pumps, Master generator plants and concrete tools.

Roberts & Schaefer Co., Chicago—R&S 6x12-ft multi-draw Super Airflow cleaner for Red Jacket Coal Corp.

Rockbestos Products Corp., New Haven, Conn.—Rockbestos A.V.C. mining cables.

John A. Roebling's Sons Co., Trenton, N. J.—Wire rope, electrical wires and cables, screen cloth.

Rome Cable Corp., Rome, N. Y.—Rome 60 mining cables.

Rubberset Co., Newark, N. J.—Paint brushes and roll applicators.

Sanford-Day Iron Works, Knoxville, Tenn.—Sanford-Day automatic drop-bottom mine cars, S-D floater wheels.

Skilsaw Inc., Pittsburgh, Pa.—Skil power tools.

Smith & Barnett, Huntington, W. Va.—K&E surveying instruments, Variagraph drafting sets, Beck & Harvey Versa Liner whiteprinting machines, Paragon blueprinting machines.

Smith Welding Equipment Corp., Montclair, N. J.—Welding equipment.

Southern Oxygen Co., Bluefield, W. Va.—Acetylene and oxygen, Stulz-Stickles Manganal wedge bars for repair work, Victor welding equipment, Stoody hard-facing rods, Sight-Feed acetylene generators, Miller welders, Handy & Harmon electrodes, All-State alloys, Jack. n electrode holders, Alloy rods, Scott Air-Pak, Bradford Admiral tools.

Square D Co., Richmond, Va.—Motor-control accessories, pump controls,

(*Continued on p 172*)

J. Robert Bazley Inc. finds Jalloy Heat-Treated Steel Plate

Pays off in Maintenance Savings

J&L STEEL

Welding Jalloy wear plates between tooth bases on an Esco drag bucket.

Heat-treated Jalloy bed liner plates and reinforcing strips cut deadweight—increase service life in this Euclid.

Patty Dennery, Supt., (left) and Pete Ambrose, foreman, discuss using heat-treated Jalloy to reinforce a drag bucket.

Equipment Downtime Cut . . . FEWER MAN-HOURS SPENT ON REPAIR . . . COST OF STEEL FOR MAINTENANCE LOWERED AND UNIT PRODUCTION INCREASED WITH TOUGH J&L JALLOY HEAT-TREATED PLATE

J. Robert Bazley, Inc., Pottsville, Pa., stripping and construction contractors, knows that high equipment maintenance costs can drain the profits right out of an operation. That's why they've standardized on heat-treated Jalloy plate for wear and reinforcing plates on equipment where impact and abrasion determine the service life of steel.

On Bazley's equipment, which includes 30 shovels and draglines, 36 Euclid trucks and approximately 95 other earthmoving pieces, heat-treated Jalloy applications include:

- ✓ **Three-eighths-inch plate for truck body liners, reinforced with ⅝" strips 5" wide spaced on 11" centers. The ⅜" Jalloy liner replaced ½" high-strength steel, resulting in a weight saving of 500 lbs. per truck bottom.**
- ✓ **Three-quarter-inch wear plates between drag-bucket-tooth bases, 1" plates on side cutting edges and ¾" shoes where sides join bottom of bucket.**
- ✓ **Other uses include dozer-blade corner plates and grader scraper teeth.**

Result?—J&L *heat-treated Jalloy lasts 4 to 6 times as long as mild steel previously used.*

Why not check into J&L Jalloy, the steel that's produced exclusively by J&L to meet the needs of mining and quarrying men. Write today for your free copy of our booklet, "For Longer Wear . . . Less Repair—Jalloy J&L Special Alloy Steel." It'll give you the facts on Jalloy and tell you how others are saving money with this really tough mining steel.

Jones & Laughlin Steel Corporation
411 Jones & Laughlin Building
Pittsburgh 30, Pa.

Please send me a copy of your free booklet, "For Longer Wear . . . Less Repair—Jalloy J&L Special Alloy Steel."

Name_____

Company_____

Address_____

JONES & LAUGHLIN STEEL CORPORATION

From its own raw materials, J&L manufactures a full line of carbon steel products, as well as certain products in OTISCOLOY *and* JALLOY *(hi-tensile steels).*

PRINCIPAL PRODUCTS: HOT ROLLED AND COLD FINISHED BARS AND SHAPES • STRUCTURAL SHAPES • HOT AND COLD ROLLED STRIP AND SHEETS • TUBULAR, WIRE AND TIN MILL PRODUCTS • "PRECISIONBILT" WIRE ROPE • COAL CHEMICALS

ATLAS

STORAGE BATTERY LOCOMOTIVES

are more efficient than any other • • S-B Locomotive

7 TON
42" HIGH

PERMISSIBLE

Approved by the Bureau of Mines for gassy locations.

Atlas Permissible Locomotives have long been famous for dependability and their ability to out-perform all others. Maintenance costs are notably low. These permissibles provide the ultimate in safety and accessibility.

ATLAS ENGINEERING SERVICE — IS ALWAYS AT YOUR SERVICE

Complete details and specifications on request.

THE ATLAS CAR & MFG. CO.

CUT YOUR BEARING COSTS!

PROMET
THE Engineered BRONZE

AXLE BEARINGS, JOURNAL LINERS, BUSHINGS, WEARINGS PARTS for General Electric, Sullivan, Goodman, Oldroyd, Jeffrey, Westinghouse and Joy equipment.

A SPECIFIC FORMULA FOR EVERY REQUIREMENT— A money-back guarantee of longer service and lower maintenance cost.

PROMET LEAD or TIN BASE BABBITT

PROMET BRONZE BAR STOCK

Round, solid or tubular. Rough cast or fully machined. Cored stock, all sizes (by ⅛" steps), from ½" minimum core to 26" O.D. and 13" lengths or less. Six grades of hardness.

DEALERS! Write for attractive proposition

Write for free folders or let us quote on your requirements.

The American Crucible Products Co., 1307 Oberlin Ave., Lorain, Ohio, U.S.A.

Prompt deliveries. Stocks maintained at

BECKLEY, W. VA., The Universal Supply Company, 1207 S. Kanawha St. ..... Phone 7307
KERMIT W. VA., Controller Block & Supply Company ..... Phone 381
McCLURE, Va., The Erwin Supply & Hardware Co. .....
LORAIN, OHIO, The American Crucible Products Co. ..... Phone 6883-1
TERRE HAUTE, IND., The Mine Supply Co., Inc. ..... Phone Crawford 8150

Other Representatives

ALTON, ILL., Frank E. Rhine, 523 Blair Ave. ..... Phone 3-0624
BIRMINGHAM 3, ALA., F. B. Keiser, Jr., 1608 First National Bldg. ..... Phone 7-2381
MT. LEBANON, PA., J. E. Nixon, 739 Roosevelt Ave. ..... Phone LE-0670
NEW YORK CITY, Trans American Commerce Co., Inc., 165 Broadway ..... Phone 7-4340

Bluefield Coal Show

pushbutton operators, circuit breakers and switches.

W. R. Stamler Co., Paris, Ky.—New hydraulic car-spotter for trip loading.

Steel Products Engineering Co., Springfield, Ohio — Combustioner stokers.

Superior-Sterling Co., Bluefield, W. Va.—Products of: Anaconda Wire & Cable Co., Blackhawk Mfg. Co., Rigid Tool Co., Genseo Tools, Van Dorn Electric Tool Co., Joseph E. Dixon Crucible Co., Black & Decker, American Brake Shoe & Foundry Co., Templeton, Kenly & Co., American Blower Corp., American Steel & Wire Co., Diamond Chain Co., Duff-Norton Mfg. Co., B. F. Goodrich, Gorman-Rupp Co., Ideal Industries, Jeffrey Mfg. Co., Reardon Co., Rockbestos Products Co., Timken, Toledo Pipe, Westinghouse and others.

Syntron Co., Homer City, Pa.—Vibrating feeders, feeder-screen units, testing screens, portable power tools.

Tamping Bag Co., Mt. Vernon, Ill.—Seal-Tite tamping bags, Stay-Put locknuts, Red Necktie weed and brush killer.

Templeton, Kenly & Co., Chicago—Lever, screw and hydraulic jacks, roof and timber jacks, new Re-mo-trol hydraulic units, maintenance tools, including center-hole jenny and aluminum journal jack.

Texas Co., New York—Mining lubricants.

Timken Roller Bearing Co., Canton, Ohio — Tapered-roller bearings and multi-use, carbide-insert and Spiralock rock bits.

Toledo Pipe Threading Machine Co., Toledo, Ohio—Toledo hand and power pipe-threading and cutting equipment.

Bertrand P. Tracy Co., Pittsburgh, Pa.—Cutter chains and sprockets, mining replacement parts.

Trabon Engineering Co., Cleveland, Ohio—Trabon lubricating equipment, including centralized systems for oil and grease.

True Temper Corp., New Cumberland, Pa.—Hand Tools and shovels.

Trumbull Electric Mfg. Co., Norwood, Ohio—Safety switches, including new Type D side-operated, packaged switchboards, lighting panelboards, combination starters, fuse pullers, FVK Flex-A-Power distribution systems.

Union Wire Rope Corp., Ashland, Ky.—Union wire rope.

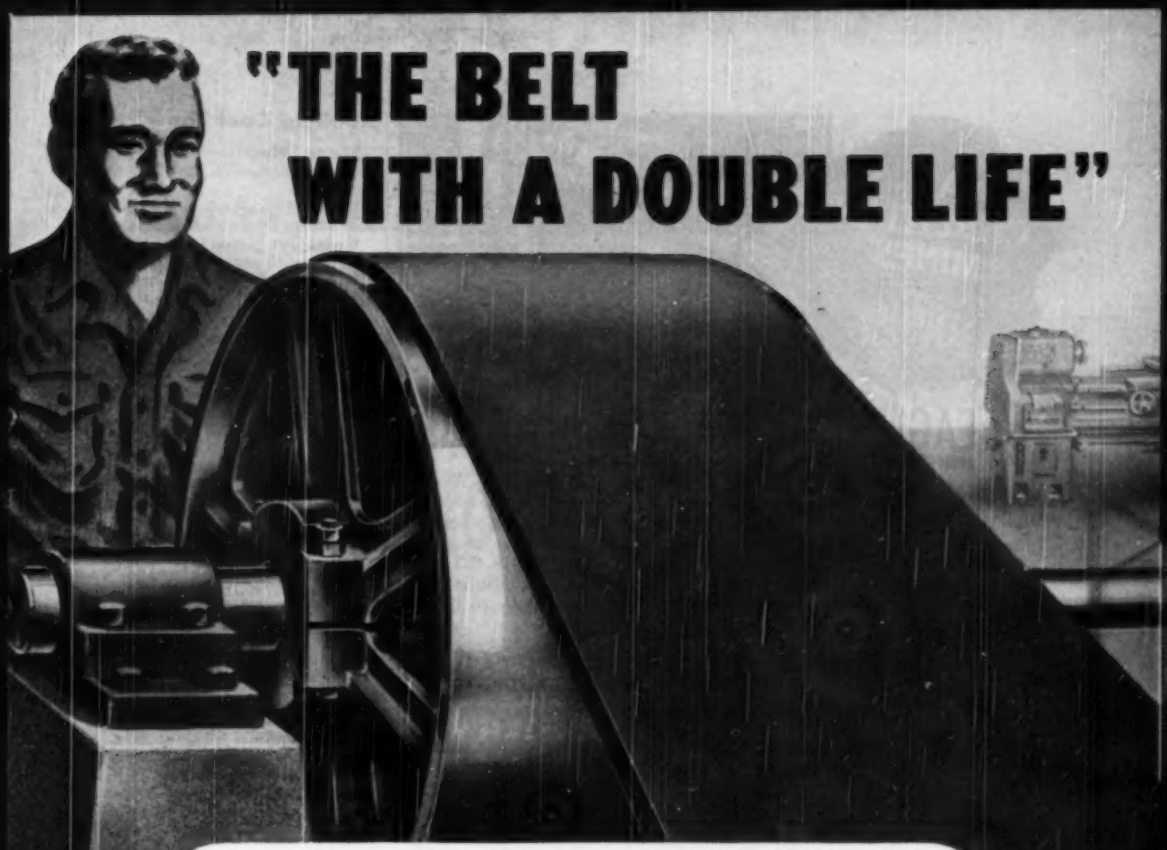
United States Rubber Co., New York—Royal Gold mining cables, U.S. conveyor belts, hose, V-belts, other coal-mining products.

Van Dorn Eelectric Tool Co., Towson, Md.—Electrical tools.

Vascoloy-Ramet Corp., Pittsburgh, Pa.—V-R TanTung cutter bits and auger, percussion and strip-type drill bits.

Victaulic Co. of America, New York—Victaulic couplings and full-flow fittings, Vic power groover.

(*Continued on p* 174)



QUAKER TRANSMISSION BELTING

LASTS 10 YEARS . . . CUTS COSTS IN HALF!

Day and night for six years . . . regular running for more than four years. That's the service record of an eighteen inch, six ply Quaker Ironsides Endless Belt on a forty foot drive powered by a 150 horsepower steam engine. Twice the length of service of any other belting . . . a saving of more than $400.00.

More proof of why more plants are specifying Quaker for quality. Each and every Quaker Belt is designed for a particular job . . . pre-tested and performance proved for maximum service and lower operating costs.

That's why you'll find so many drives equipped with Quaker Belts throughout the Coal Industry.

For less wear, stretch and slippage . . . for positive power transmission Quakerize your drives. There's a Quaker flat belt or V-Belt for every industrial need. Write for complete catalog.

PACKINGS THAT PRESERVE POWER

Quaker packings are pre-tested for size, shape and quality to assure perfect fit, long service, maximum power.

HOSE FOR RUGGED WEAR

Pre-tested and performance proved for flexing and strength, there is a Quaker Hose for air, steam, liquids.

QUAKER RUBBER CORPORATION • PHILADELPHIA 24, PA.

Division of H. K. Porter Company, Inc.

Pittsburgh • New York • Cleveland • Chicago • Houston • Atlanta

Western Territory

QUAKER PACIFIC RUBBER CO. • San Francisco • Los Angeles • Seattle

QUAKER RUBBER PRODUCTS

custom made for every industrial use

an EAGLE COAL CRACKER cuts costs!

Firm coal—easily fractured coal—east or west Kentucky—West Virginia—Pennsylvania—Illinois—Alabama—it's all the same to an Eagle Coal Cracker. Easily turns out 20 to 50 tons per hour, depending on firmness and size of lump fed. Handles mine run lumps 8" to 10". Reduces to 3/8" to 1-3/8" or 1-3/8" to 2-3/4" depending on gearing. Stationary or portable models. Minimum power required—low maintenance cost. Send for Bulletin 649.

SINCE 1872 Progress Service

OLSON SELF DUMPING MINE GAGES
AND STOKER COAL CRUSHERS

EAGLE IRON WORKS

181 Holcomb Ave. • Des Moines, Iowa

JEEP IT ANYWHERE
to
PROVE YOUR PROPERTY
Core drill can be mounted on truck or jeep

The new Acker Teredo is light, so compact, so simple that it can be mounted easily on truck or jeep and driven by separate motor or power take-off. Compact as it is, the Teredo is a high capacity, fast-operating unit capable of extracting cores up to 2 3/16" in diameter and of drilling to depths of 600 feet.

Special Acker bituminous core barrel recovers cores where others fail. Ask about it.

Send for bulletin #3-C-CA

ACKER DRILL COMPANY INC.
Scranton 3, Penn.

Bluefield Coal Show

Viking Machinery Sales Corp., Jackson, Mich.—Viking dust-control equipment.

Vulcan Iron Works, Wilkes-Barre, Pa—Vulcan mining equipment.

Wedge Bar Screen Corp., New York—Dewatering screens and sieves.

Westinghouse Electric Corp., Pittsburgh, Pa.—Roof-bolting materials, line mterials, transformers, Life-Line starters, safety switches, brushes, Life-Line motors, Oil-Tite control stations and units, lamps and lighting equipment, Automatic tire-welding equipment, 10-ton low-height Flatronder and 15-ton low-height Main Haulage locomotives.

West Virginian Armature Co., Bluefield, W. Va.—Westinghouse welding equipment and electrodes, Ohio Carbon brushes, Dolphs insulating varnishes, SKF bearings, Wire Rope Corp. wire rope, W. Va. Armature coils, field coils, brasses, journal boxes, mining replacement parts and repair service.

West Virginia Steel Corp., Charleston, W. Va.—Steel fabrication, structural and cold-rolled steel, tool steel, pipe, wire rope, welders, metal saws, hoists, building specialties, wire products.

West Virginia Steel & Mfg. Co., Huntington, W. Va.—Roof bolts, steel ties, hydraulic rail benders.

Williamson Supply Co., Williamson, W. Va.; Banks-Miller Supply Co., Huntington, W. Va.; Buchanan-Williamson Supply Co., Grundy, Va.—Raybestos-Manhattan conveyor belt, hose and trolley guard, Permold cable-jacket splicer, Johnstonite flexible pipe, Life-Line motors, Simplex mining cables.

Yale & Towne Mfg. Co., Philadelphia, Pa.—Yale chain hoists.

Other exhibitors included:

Appalachian Electric Power Co.
Bituminous Coal Institute.
U. S. Bureau of Mines.
West Virginia Dept. of Mines.
West Virginia Heart Association.
West Virginia State College.
West Virginia University.
Mercer County Vocational Schools.

Coal Men Named to Natural Resources Group

Four leading coal executives recently were appointed to serve on the 39-man Natural Resources Committee of the United States Chamber of Commerce for the coming year. The four men are: E. R. Keeler, chairman of the board, Franklin County Coal Corp., Chicago; A. L. Lynn, vice president, Island Creek Coal Co., Huntington, W. Va.; James Prendergast, vice president, The M. A. Hanna Co., Cleveland, and O. L. Scales, vice president, The Enos Coal Mining Co., Indianapolis, Ind.

WANTA KEEP OUT OF THE HOLE?

DODGE trucks are "Job-Rated" to cut hauling costs!

Here's a truck that will carry your loads over your roads at lowest cost. In fact, it will go even where there are no roads at all!

It's a Dodge "*Job-Rated*" truck! It has a "*Job-Rated*" engine to give you power to spare. It has a "*Job-Rated*" chassis—engineered and sized to your exact mine hauling needs.

Because it is "*Job-Rated*," you can count on it to pull your loads from the mine quickly, easily and dependably.

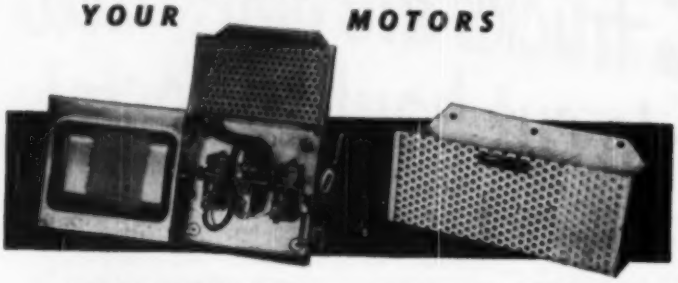
Because it will be economical—both to operate and maintain—it will keep you out of the hole financially, too!

Ask your Dodge dealer about the good deal he can give you—right now—on a truck "*Job-Rated*" to fit your job, save you money!

With all their extra value DODGE "Job-Rated" TRUCKS are priced with the lowest

SMOOTH STARTS with GUYAN

D. C. STARTERS MEANS LONGER TROUBLE-FREE SERVICE FROM YOUR MOTORS



GUYAN TYPE MMS MOTOR STARTER
Manually operated — automatically makes armature-to-line connection at proper speed to insure smooth starts after power disruptions. Solderless lug connections.

GUYAN TYPE CMS MOTOR STARTER
Limits initial inrush of current—permits smooth starts—prevents arcing. Requires no operator. Similar to type MMS except for omission of manually operated starting switch.

Write for bulletins

GUYAN MACHINERY CO. LOGAN, W. VA.

CONTROL Your Water Problems with the *Flood City* PLUNGER PUMP

Power end is made of bi-metal semi-steel with a large cover to facilitate inspection. All moving parts are completely self-lubricating. Intermediate shaft runs on adjustable roller bearings. Furnished V-Belt or Gear Drive. Size 5 x 6, Capacity, 50 gals. per minute, 2" suction and 2" discharge.

This pump uses the leak-proof, cold-resistant FLOOD CITY REVERSIBLE WATER END—standard for replacement purposes in large and small coal mines. Write for more information on this and other Flood City Mining Equipment.

Flood City Brass & Electric Co.
Messenger and Elder Streets . JOHNSTOWN, PA.
Branch Offices: 6 Virginia St. W., Charleston, W. Va.

New Developments

The majority of outstanding stock of Hatfield-Campbell Creek Coal Co., Cincinnati, has been bought by Amherst Coal Co. and Logan County Coal Corp., both of Charleston, W. Va. Announcement of the sale was made by James T. Hatfield Jr., vice president of the Cincinnati company. The deal reportedly involved more than $1,500,000. The purchased company will continue to operate with its present management and personnel.

The Beaver Ridge Coal Co. recently has been organized at Glo, Ky., and reportedly will start new developments at once, building up to capacity of 1,000 tpd. Shipments will go over the Beaver Creek branch of the C. & O. Ry.

The Jenny's Creek Coal Co., Paintsville, Ky., a new organization, is expected to start early development of several sizable truck mines in Johnson County. Production will start at 500 to 600 tpd.

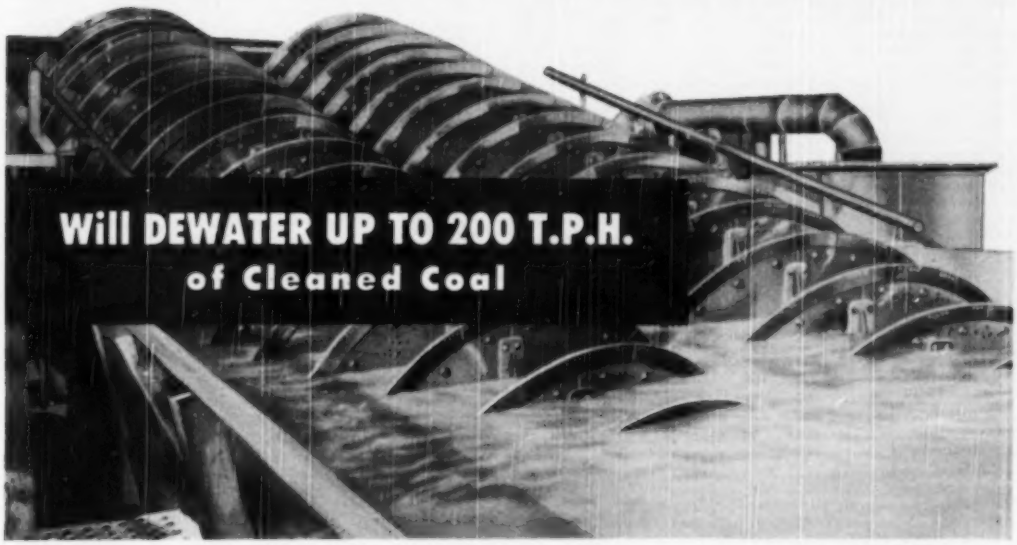
Construction of the new central preparation plant of the Hanna Coal Co., near Cadiz, Ohio, reportedly is progressing rapidly and is expected to be completed about Nov. 1. Said to be the largest commercial plant of its kind yet to be built, the plant is designed to utilize three distinct types of coal-cleaning equipment. Coal will flow over three separate circuits, coming together at the loading point to permit shipping almost any commercial size or combination of sizes. Loading facilities will permit loading of a railroad car about every 2½ min in normal operation. Raw-coal capacity is planned at 1,500 tph, and cleaned-coal capacity at 1,275 tph.

Truax-Traer Coal Co., Chicago, has announced plans to develop a new stripping between DuQuoin and Pinckneyville, Ill. The property, known as the Shakerage site, is a part of reserves the company has held for some years and is said to have a "good supply of coal." It is expected to be under development for 2 or 3 yr and actual mining will begin either this fall or in the spring, depending on progress, company officials stated.

The Bird Coal Co. has announced the change in name of its wholly-owned West Virginia subsidiary from the Barnes Coal Co. to the Barnes-Dawson Coal Co. The company operates the Dawson mine near Clarksburg, W. Va., with its coal marketed by the Bird Coal Co. as exclusive sales agents.

Underground development work has been begun in the new mine of the Pond Creek Pocahontas Co. in the Elkhorn No. 3 seam, according to the company's report issued last month.

ONE AKINS CLASSIFIER



This is the world's largest spiral dewatering classifier. It is a 66" duplex Type S Akins and is desliming and dewatering phosphate flotation feed. Such a machine would have a capacity of 120 T.P.H. of coal—sizes up to 78" duplexes are available for higher capacities, up to 200 T.P.H.

Akins Classifiers and Dewaterers are efficient and extremely economical to operate in any size. The slow, continuous operation of the spiral assures minimum wear and maintenance cost — no sprocket or pin wear. The wearing surfaces of the conveying mechanism are protected by easily replaceable abrasion-resistant shoes. These features offer freedom from breakdown and upkeep difficulties common with other dewatering equipment.

Whatever capacity you require, there is an Akins to suit your operation more economically than any other dewatering equipment.

CIW — COLORADO IRON WORKS CO.

Use the Coupon

Our CIW engineers are at your service on any separation or dewatering application. Give as much information as possible in writing.

•

Ninety Years' Service to Mining
1860 — 1950

COLORADO IRON WORKS CO.
1626 17th St. **Denver, Colo.**

Please send me your Bulletin No. 49 on coal cleaning.
I am interested in: ☐ Low cost dewatering equipment
☐ High capacity HMS cleaning equipment.

NAME _____

TITLE _____

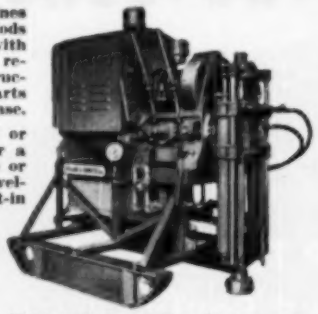
COMPANY _____

ADDRESS _____

60 YEARS of Successful Experience in DIAMOND CORE DRILLING

enables us to manufacture drilling machines that can be relied upon for long periods of continuous high-speed operation, with greatest possible percentage of core recovery. Modern designs, rugged construction, and liberal use of alloy-steel parts minimize time losses and operating expense.

Swivelheads can be either "Screwfeed" or "Hydraulic." Power-unit can be either a gasoline or Diesel engine, an air engine or an electric motor—each driving the swivelhead and hoisting drum through a built-in four-speed sliding-gear transmission. A complete line of improved accessory equipment provides for every drilling and sampling requirement. Catalog mailed promptly on request.



Model 40-C Core Drilling Machine, with Gasoline Engine Power Unit and Oil Operated Hydraulic Swivelhead.

CONTRACT DRILLING

Besides being manufacturers, we are also one of the largest contractors for any type of Core Drilling—including Grout Holes and Grouting. Experienced crews and supervisors are available at all times for service anywhere in the world. Estimates, and constructive suggestions whenever possible, submitted promptly without charge.

"TRUCAST" BORTZ DIAMOND BITS

have proved their superiority for years in all types of rock formation. Bits may be furnished with various grades of bortz diamonds, set in a matrix of either Beryllium Copper or Beryllium Nickel alloys. Available in a wide range of standard and special sizes ranging from 1½" to 7¾" in diameter.

SPRAGUE & HENWOOD, Inc. Dept. C M Scranton 2, Penna.

A NEW Timer Relay

PRACTICALLY non-breakable, steel-clad Durakool "fixed time", Timer Relay with mercury to mercury contact operates in "sealed-in" hydrogen under pressure. Tamper-proof delays available from .15 to 20 seconds in either normally open or normally closed actions. Millions of contacts assured.

- ★ No false contacts
- ★ No chatter
- ★ Quiet in operation
- ★ Eliminates double contacting or breaking of circuit

Send for bulletin 800

Durakool STEEL MERCURY *Relays*

See Telephone directory for local distributor or write
DURAKOOL, INC.—ELKHART, INDIANA

Following initial production in June, some 4,000 tons was produced in July and output is expected to be increased each month, with development work underground continuing for the next several months. The new preparation plant serving the property was completed in July.

The Premier Pocahontas Collieries Co., Bluefield, W. Va., has changed its corporate name to Premier Pocahontas Co. Corporate officers remain the same. The company's new mine being opened at Herndon, W. Va. (*Coal Age*, April, p 146), is now under development. It will be known as the Tierney No. 6 mine and will ship from Tierney, W. Va., mining the Pocahontas Nos. 6 and 3 seams. Eventual capacity is expected to be about 2,000 tpd. E. L. Murphy is superintendent of the new operation.

The Pioneer Coal Co., Sheffield, Ill., has recently worked out its acreage and has been reorganized as the Pioneer Collieries Co., with operations at Laura, Peoria County, Ill. Hubert Meade is president and general manager of the new company, which is an Illinois corporation. Mining operations are expected to begin about Nov. 1.

The Consumers Mining Corp., Tazewell, Va., has changed its name to the New Garden Coal Co. Officials remain unchanged, with C. P. Gillespie as president, R. O. Van Dyke, vice president, and J. F. Shockley, general manager.

The Kentucky Cardinal Coal Corp., Cardinal, Ky., is in the process of developing a new operation in the Wallins seam. Present production is on a small scale, pending determination of final mining methods. Output of the property is shaped over the company's present tipple and is expected to reach 800 tpd in about a year, with reserves estimated at about 3½ million tons. The company's No. 1 mine is being mined out and will probably cease operation by the end of this year.

Promotion Plan to Boost Sales of Coal Heaters

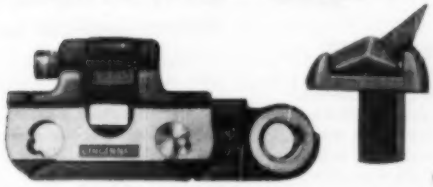
A comprehensive three-way cooperative promotion plan to boost the sale of coal heaters in Coal Heating Service communities has been placed in the hands of heater manufacturers, their dealers and CHS groups throughout the country.

Based on the success of an experimental merchandising promotion last year in several southeastern cities, the new sales plan was evolved by CHS Division of the National Coal Association, with the help of CHS retailers, and in cooperation with a special committee designated by the Solid Fuels Division of the Institute of Cooking and Heating Appliance Manufacturers.

A canvas of heater manufacturers

MAN POWER
IS ONLY AS EFFICIENT AS YOUR EQUIPMENT

ARE you getting maximum tonnage and efficiency out of your available manpower? Why not profit by the experience of hundreds of Mine Operators all over the world who are using Cincinnati Chains . . . double-ended reversible Bits . . . and Cincinnati sturdy Cutter Bars? Their experience is the same . . . greater tonnage . . . less power consumption . . . satisfied operators . . . less maintenance and a saving in valuable man hours. Cincinnati Coal Cutting Equipment, heat treated, and drop forged, is engineered for efficient low cost performance even under adverse cutting conditions.



CINCINNATI STANDARD CHAIN

Cincinnati Standard Chain accommodates Stanex Holder and Bit or regular ½" x 1" bit. Similar in design to the famous Duplex Chain.

STANEX
HOLDER AND BIT

The Stanex Holder with factory made double-ended Stanex Bit fits all chains that accommodate the regular ½" x 1" bit.

CINCINNATI CUTTER BAR

Specially designed to meet hardest cutting conditions . . . to withstand bending stresses. Constructed to fit all popular mining machines . . . both regular and thin kerf.

THE CINCINNATI MINE MACHINERY CO.

2983 SPRING GROVE AVENUE • CINCINNATI, OHIO

It's Smart... to Convert

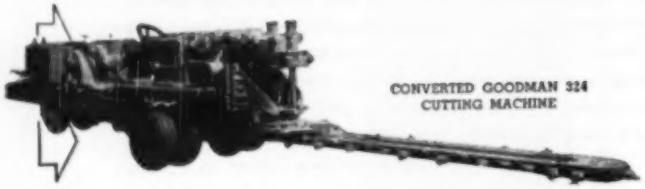
CONVERTED GOODMAN 460 LOADING MACHINE

Now! CONVERTED LOADING MACHINES

With ten years of cutting machine conversion experience as a background, the Lee-Norse Company, after exhaustive analysis, has pioneered another development in the modern trend toward trackless mining—TRACK-MOUNTED LOADING MACHINES CONVERTED TO RUBBER TIRE MOUNTINGS !

Save on your present investment and lower your production costs . . . take advantage of the desirable, mobile features of rubber-tired mining equipment . . . CONVERT YOUR LOADING MACHINES NOW !

CONVERTED JEFFREY 29U CUTTING MACHINE



CONVERTED GOODMAN 324 CUTTING MACHINE

CONVERTED CUTTING MACHINES

The Lee-Norse Company specializes in converting track-mounted cutting machines and loaders to rubber tires . . . conversions that can result in modernization and years of additional service to your present track-mounted equipment. Rubber-tired mining equipment permits faster tramming at the working face and minimizes the wear-and-tear on your mine road beds. Profit by the advantages of trackless mining now ! IT'S SMART . . . TO CONVERT !

Our engineers will be pleased to furnish estimates and delivery dates on converting your track-mounted cutting machines and loaders. Write or telephone . . .

Lee-Norse Company
CHARLEROI, PA.

shows that many are interested in participating in the promotion and are planning to join with their retail outlets in extra merchandising effort during the late summer and fall, it was reported. From three to six manufacturers have evidenced interest in cooperative promotions in each of 11 southeastern cities where CHS groups are making plans for sales campaigns.

The plan calls for close cooperation between local CHS groups and the furniture and hardware dealers who handle coal heaters, with supporting activities by the manufacturer. It is contemplated that a "Modern Coal Heater Week" will be designated by the local groups, during which all participants will coordinate their advertising and merchandising to focus public attention on coal heaters.

Special advertising materials have been supplied to all CHS groups, along with decorative banners for use with window and floor displays. Point of sale show cards, lapel badges for heater salesmen and truck banners urging the purchase of coal heaters, also have been provided.

The special advertising promotes the many advantages of the modern coal heater and stresses the reliability of coal by pointing out that it "is the only fuel that can go to war without deserting the home front."

Long Claims "Piggyback" As Trademark

Re the discussion of bridge or transfer conveyors behind loading machines or continuous miners in the July, 1950, issue of *Coal Age*, in which the term "piggyback" was used in connection with such conveyors, counsel for A. R. Long, of the Long Super Mine Car Co., Fayetteville, W. Va., states that Mr. Long claims the term as his trademark and has filed application for its registration as such.

Heavy Ore Shipments May Tighten Coal-Car Supply

Unusually heavy rail shipments of iron ore into the Pittsburgh and Youngstown steel-making areas in August and September may cause a shortage of open-top cars for hauling coal at the time when demand for coal reaches a seasonal peak. The shortage would be felt mostly by coal mines served by the B. & O. and N. Y. C. railroads.

Heavy rail movement of iron ore this year are caused by the record late opening of the lakes, some three weeks after the usual opening date, with the result that shipments as of June 1 were some 20,000,000 tons behind the same date last year.

With a probable shortage of coal cars in view at the time when industrial and retailer buying of coal

Study fuel costs at long range...

then power your plant with B&O Bituminous Coals

Power plant design and operation present few problems to an industrial engineer. But, truly economical performance rests on *added knowledge*—of reserves and availability of fuels—of their cost relationships and combustion characteristics.

In planning the operation of your power plant, study the value of bituminous. Check production cost at the mines. Look at delivered cost of Btu's. Study how carefully the coal you order is sized and cleaned so that waste is avoided. Check availability of continuous supply in normal times and in emergencies. Find out if reserves are extensive enough to assure future supply.

In the coals produced on the Baltimore & Ohio, *you'll find the right answers* to low-cost, long-range supply. Whether you need high-, medium-, or low-volatile coals, they're here in abundance. *Ask our man!* He shall be glad to supply technical help on every phase of coal production, preparation, distribution, and utilization.

BITUMINOUS COALS FOR EVERY PURPOSE
—FROM MODERN MINES LIKE THIS →

BALTIMORE & OHIO RAILROAD

Constantly *doing things*—better!

Min-Pro

ALL STEEL PREFABRICATED PORTABLE TIPPLES

CAPACITIES FROM 80 to 200 T.P.H.

FIREPROOF
HARD TO DAMAGE
COSTS LESS THAN A WOODEN TIPPLE
ATTRACTIVE TIME-PAYMENT PLANS CAN BE ARRANGED

THE MIN-PRO PLANT INCLUDES
- STEEL PLANT FRAME
- SHAKER SCREEN
- PICKING TABLE
- COAL CRUSHER
- FEEDER AND BINS
- ALL CONVEYORS
- ALL MOTORS AND WIRING

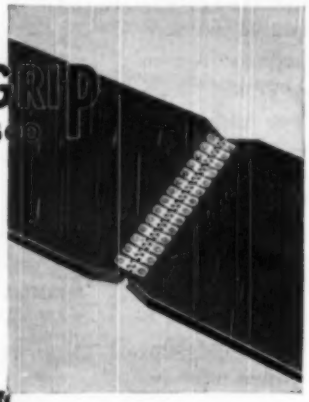
WHAT MIN-PRO PLANTS DO
- CLEAN — PICK — & SIZE MINE-RUN COAL
- REDUCE MINE-RUN TO STOKER SIZES IN ONE OPERATION

BUILT BY BONDED SCALE & MACHINE CO. FOR
MINERAL PROCESSING EQUIPMENT CORP.
2195 S. Third Street Columbus 7, Ohio
PHONES: GArfield 2186; Evenings: UNiversity 2832

HINGED PLATEGRIP
BELT FASTENER No. 5

for
Conveyor Belts

Specially designed to permit quick and easy method of adding to, or reducing length of belt. Just pull the hinge pin to open joint.



Write for Catalog Sheets. PLATEGRIP for dust-tight permanent joints. HINGE PLATEGRIP for "add-on" belts. REPAIR PLATES for patching worn or repairing torn belts.

ARMSTRONG-BRAY & CO.
5340 Northwest Highway
Chicago 30, Illinois

reaches a seasonal peak, some stiffening of coal prices are expected.

Car shortages already were being felt by mid-August in various parts of West Virginia and Eastern Kentucky. Reduced output and temporary shutdown of mines in various sections of those areas were reported.

Senate Fuels Inquiry Blocked After Passage

The proposed fuels policy investigation by the Senate Interior Committee, which was unanimously approved by the Senate Aug. 15, has been postponed by action of Sen. Thomas (D., Okla.). Sen. Thomas offered a motion to reconsider the unanimous vote and under the rules the committee cannot go ahead until his motion has been acted upon by the Senate, which may be some time because of the crowded condition of its calendar.

Introduced by Sen. Myers (D., Pa.), the resolution as passed by the Senate directed the committee to survey available fuel resources and probable future consumption rates, formulate a national fuel policy to meet the nation's needs in peace or war and recommend methods to assure an ample supply for a growing economy. The committee was to have $20,000 available for the study and was to make its report by Jan. 3, 1951.

BCR Advisory Group Adds Two Operating Officials

The appointment of Frank White and August J. Breitenstein to the Mining Advisory Group of the BCR Mining Development Committee was announced Aug. 14 by Dr. C. E. Lawall, chairman of the committee.

Mr. White, who began his career in the coal industry in 1918 as an engineer's rodman, is vice president in charge of operations for the Peabody Coal Co., Chicago. Mr. Breitenstein, chief engineer of the H. C. Frick Coke Co. since 1944, is a graduate of Ohio State University and MIT in mining engineering. He entered the coal industry in 1927 and joined Frick in 1941.

The Mining Advisory Group is composed of experienced operating executives who participate in formulating specifications for the continuous mining unit and other new mining equipment being developed and advise on the various technical aspects.

Former Union Official To Get Cash Settlement

Lloyd H. Sidener, Canton, Ill., former UMWA Local president, who said he was ousted because he led a back-to-work movement during the stoppage, was to receive a check for $1,721 as compensation for wages lost as a result, the Chicago office of the NLRB announced Aug. 14. The

Better piping for every job from a single source... CRANE

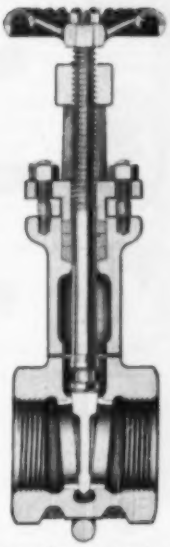
EASY-TO-SERVICE VALVES FOR MINES

Note how easy it is to dismantle these Crane Clamp Gates. By loosening two nuts, the complete bonnet assembly can be lifted out without removing the valve body from the line. Repeated opening does not affect bonnet joint tightness. Unusually compact, these brass trimmed valves are ideal for all common services in and around mines.

For heavy fluid service and on lines subject to gumming, Crane recommends all-iron inside screw clamp gates. Improved free-draining bonnet prevents entrapment of line fluids. Specially designed bonnet threads have wiping action on stem screw, which prevents sticking.

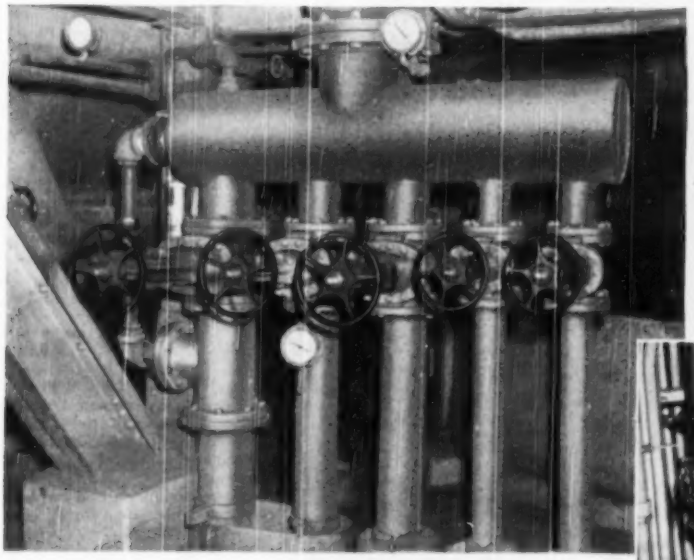
Crane Clamp Gates are available in patterns for every need: Inside Screw, O. S. & Y., and Quick-Opening. Choice of flanged or screwed ends. See your No. 49 Crane Catalog, or send for Folder AD-1667.

CRANE CO., 836 S. Michigan Ave., Chicago 5, Ill.
Branches and Wholesalers Serving All Industrial Areas



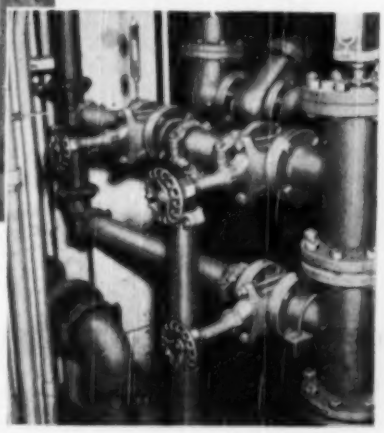
No. 486½, Screwed Clamp Gate. Working Pressures: up to 150 pounds saturated steam; 225 pounds water, oil, gas. Sizes: ½ to 4-in.

● ONE ORDER TO CRANE CAN COMPLETELY EQUIP ANY MINE PIPING INSTALLATION



MANIFOLD TO PEA AND BUCK CONE *in breaker plant; also to agitator rings and classifier. Crane supplies all piping materials for installations of this kind.*

ROTO-SLEEVE BY-PASS *equipped with Crane brass trimmed clamp gate valves.*



EVERYTHING FOR EVERY PIPING SYSTEM

CRANE

VALVES • FITTINGS • PIPE • PLUMBING AND HEATING

TIPPLE EQUIPMENT

SHEAVES

CAGES

SKIPS

LOWERING SPIRALS

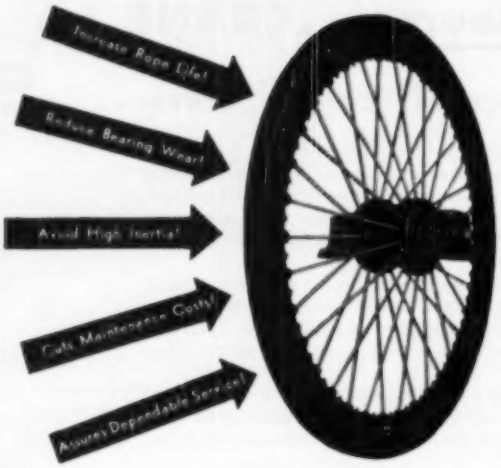
CAR PULLER AND RETARDERS

LABORATORY CRUSHERS

HOISTS

VIBRATING SCREENS

DUSTOLATORS



They all point to

HOLMES BICYCLE TYPE SHEAVE

Sturdily designed for heavy duty hoisting, yet weight is held to a minimum. Carefully balanced and accurately machined for correct alignment and smooth operation. Modern manufacturing standards plus highest quality material obtainable are used exclusively.

YOU CAN GET AN IMPORTANT EXTRA

Renewable steel liners multiply sheave life. You do not disassemble sheave, shaft or bearings in any way to replace liners, which come in segments, easy to handle and simple to mount.

A complete line of Sheaves are available in sizes to 12 feet, also a choice of plain, collar oiling, ring oiling, or anti-friction bearings. Why not decide on Holmes Sheave and Bearings and benefit from our more than 50 years experience and leadership in the manufacture of Head Sheaves and Bearings. We'd like to receive your inquiry—prices and specifications will be furnished without obligation on your part.

ENGINEERS, MACHINISTS
STEEL FABRICATORS
PATTERN MAKERS
GREY IRON FOUNDERS

DANVILLE ROBT. HOLMES BROS. ILLINOIS

ROBERT HOLMES & BROS., INC.
DANVILLE, ILLINOIS

amount was to be paid by the United Electric Coal Cos. and the UMWA, officials reported. After an agreement was reached on the NLRB charges he brought, Mr. Sidener returned to work for two days but then quit because he said he had received threats. The company has offered him his job back but has had no answer, the board said. Mr. Sidener last was reported to be in Florida.

Foreign Developments

NEW ZEALAND—New Zealand's new Conservative government has decided to stop taking over privately owned coal mines. Only two large companies survived the nationalization program of the previous Labour government—the Pukemiro Collieries, Ltd., and Kainangata Coal Co., Ltd.

Plans for converting the Benneydale state coal mine to hydraulic stowage with longwall mining have been announced. Though room-and-pillar mining is universal law in New Zealand, New Zealand prisoners of war brought back knowledge of longwall methods from Germany.

ITALY—The Italian government has decided to limit coal imports to high-quality coal and has forbidden importation of small sizes and outcrop coal. Also, imports of high-moisture coal, like that from British East Midlands, with 9% moisture, will be banned. The government has ordered that Italian coals be used for heating by all government offices, state railways and government industries.

Meanwhile, ECA in Washington has approved a loan of $3,500,000 to the Sardinian Coal Co. for modernizing and improving mines. The 8,000 miners now employed in the Sardinian mines produce only 1,000,000 tons per year. The company, which is a semi-official organization, hopes to boost output to 3,000,000 tons. Plans include erection of a 60,000-kw power plant.

The state monopoly on coal imports has been abandoned. Henceforth, coal imports will be handled by private enterprise, subject temporarily to licenses granted by the Ministry of Foreign Trade.

THE NETHERLANDS — Holland has stopped importing British coal and increased imports of German coal. Reason for the change is the British pricing system, which makes British coal cost more than German coal. Last year, Holland imported nearly 1,000,000 tons of coal from Britain.

NEW!
BAKER TROLLEY TRACTOR
For Trolley or Battery Operation

BATTERY CHARGED WHILE RUNNING ON WIRE

Here is the ideal supplementary transportation system for mines utilizing belt conveyors for main line haulage.

The BAKER TROLLEY TRACTOR, an electric-powered, rubber-tired unit, is always ready for service above or below ground—the storage batteries used for power beyond trolley system being re-charged automatically while the tractor is either running or idle on the trolley. The motor-generator charger cuts off automatically at full charge.

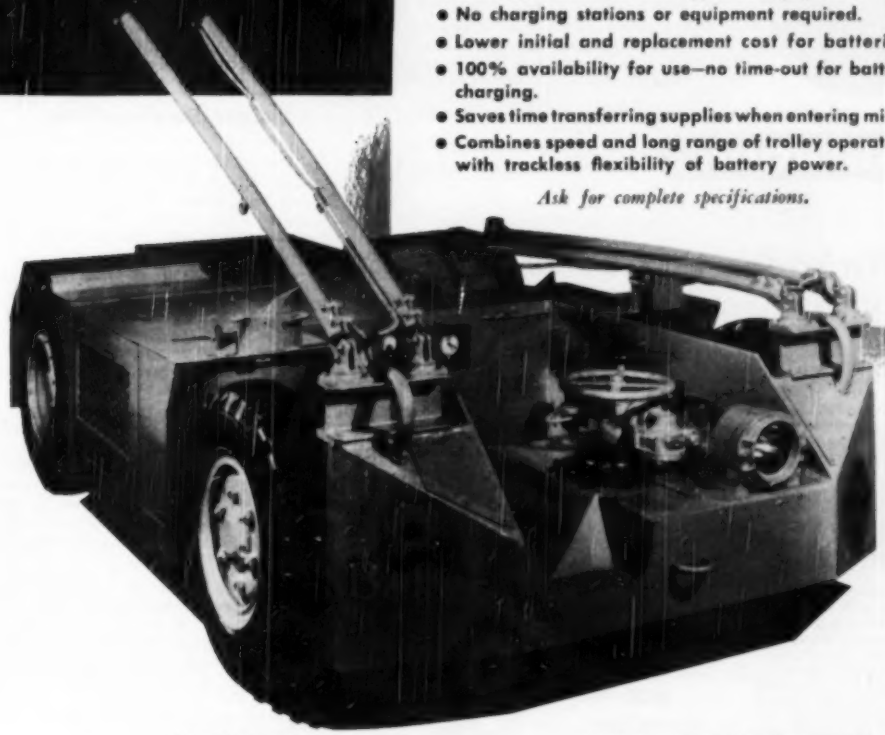
With the BAKER TROLLEY TRACTOR, personnel, supplies, tools, etc., can be transported in trailers for any distance while operating on the trolley and continue without delay where batteries take over.

Specific advantages are:

Safe for hazardous areas when running on battery power.

- **Speed and unlimited distance for long hauls.**
- **Eliminates need for two types of equipment.**
- **No charging stations or equipment required.**
- **Lower initial and replacement cost for batteries.**
- **100% availability for use—no time-out for battery charging.**
- **Saves time transferring supplies when entering mine.**
- **Combines speed and long range of trolley operation with trackless flexibility of battery power.**

Ask for complete specifications.



Manufactured by
THE BAKER-RAULANG CO.
1213 West 80th Street • • • Cleveland, Ohio

Exclusive Coal Mine Representative
J. H. FLETCHER & CO.
Chicago, Illinois • • Huntington, W. Virginia

Baker MINE EQUIPMENT

CABLE WEAR?

Ruberoid Insulating Tape will give you the right answer every time for cable maintenance problems. It does more than "patch" a cable splice—it strengthens it so that you can drag your cable *anywhere* with complete safety. You are assured of longer, more economical cable life with these seven important cost-cutting features:

- Double grip . . . both sides adhesive
- Great tensile strength . . . tough
- Won't tear, ravel or pucker
- Resists abrasion
- Acid- and alkali-proof
- Extra thick . . . one layer insulates
- Exceeds A.S.T.M. specifications by 300% in adhesiveness, 26% in tensile strength, 290% in dielectric strength.

QUALITY BUILDING MATERIALS AND INDUSTRIAL SPECIALTIES

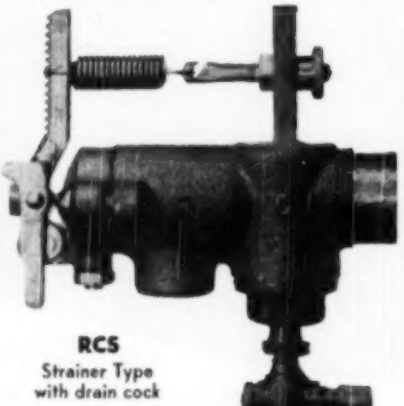
The RUBEROID Co.

EXECUTIVE OFFICES:
500 Fifth Avenue, New York 18, N. Y.

R C *Unloader* BRASS PILOT VALVES

Plain & Strainer Type for Air Compressors & Pumps Provided with Unloader

Here is an ideal pilot valve for control of compressed air now being used more extensively in coal mines in connection with rock drills for drilling roof bolt holes. The R-C Unloader Pilot Valves (plain or strainer type) are standard equipment on many leading compressors and as replacements on thousands of compressors both in the U.S.A. and overseas. The R-C valve is positive in its action—is always in a full open or closed position and cannot chatter. Adjustment is provided for any unload-to-load range from 4 to 600 lb. Maximum pressure unloads.



RCS
Strainer Type
with drain cock

Write for price and recommendation giving air pressure and range of load and unload operation desired.

R. CONRADER CO. 1207 French St., ERIE, PA.
PILOT VALVES for Portable and Stationary Air Compressors provided with Unloaders

Coal Firms Cited for Annual Financial Reports

Sixteen coal and coke companies have qualified for "Highest Merit Awards" for excellent reports to stockholders in 1949. Their reports, selected from nearly 5,000 entries by various industries, will become candidates for a final judging, when one will be designated "Best of Industry" and presented with a bronze "Oscar of Industry."

The following companies qualified: Ayrshire Collieries Corp., Clinchfield Coal Co., M. A. Hanna Co., Island Creek Coal Co., Lehigh Coal & Navigation Co., Old Ben Coal Corp., Peabody Coal Co., Pennsylvania Coal & Coke Co., Pittsburgh Consolidation Coal Co., Philadelphia & Reading Coal & Iron Co., The Pittston Co., Pond Creek Pocahontas Coal Co., Truax-Traer Coal Co., United Electric Coal Cos., West Kentucky Coal Co. and West Virginia Coal & Coke Corp.

The annual contest is conducted by Weston Smith, *Financial World*. A year ago, the 1948 report of United Electric Coal Cos. won the award for the best report in the coal group.

Coal Publications

The following publications by the U. S. Bureau of Mines may be obtained free upon request to the Publications Distribution Section, 4800 Forbes St., Pittsburgh 13, Pa. All are 8x10½-in; paper; mimeo.

Annual Report of Research and Technologic Work on Coal, by A. C. Fieldner and Sidney Gottlieb. I.C. 7565. What the Bureau has done to improve efficiency and quality and investigate reserves, conservation, safety and synthetic liquid fuels.

Coal-Mine Explosions and Coal- and Metal-Mine Fires in the United States in 1949, by J. J. Forbes, W. J. Fene and H. B. Humphrey. I. C. 7572. 17 pp. Reason for the moderate total of eight explosion fatalities in coal mines in 1949 is thought to be elimination of hazards following the disasters in 1947.

Organic Sulfur in Synthesis Gas: Occurrence, Determination and Removal, by A. E. Sands, H. W. Wainwright and G. C. Egleson. R. I. 4699. Description of the Bureau's gas-purification pilot plant and progress in the search for low-cost, effective ways to remove sulfur impurities from synthesis gas.

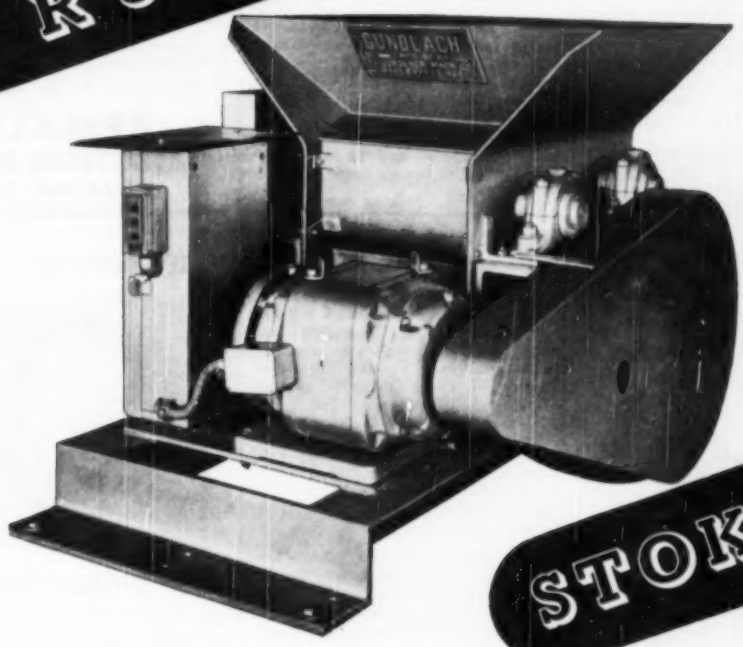
The following are available from the source given for each and at the prices quoted:

Inundated Anthracite Reserves: Eastern Middle Field of Pennsylvania, by S. H. Ash, H. D. Kynor, R. W. Fatzinger, B. S. Davies and J. C. Gilbert. U. S. Bureau of Mines, Bulletin 491. 15c., Supt. of Documents, Govern-

FROM MINE RUN TO STOKER COAL WITH "*Two Stage*" CRUSHING IN ONE MACHINE!

MINE RUN

The GUNDLACH "*Two Stage*" Coal Crusher incorporates two crushing stages in one machine and is designed to reduce RUN-OF-MINE to STOKER COAL in ONE operation. Compact design simplifies structural supports and installation. Rugged simple construction combined with engineering proved in the field makes this machine a profitable and reliable unit.



STOKER

- Crushing rolls are STEEL, hard faced and balanced.
- All gears are steel cut; Timken roller bearings used throughout.
- Furnished with electric, gasoline or diesel power unit.
- Weight approximately two tons. Height 42" Width 47" Length 6'3" (Electric power unit)

Fulfilling an urgent need in the industry, the GUNDLACH "*Two Stage*" Crusher has delivered over 85% usable stoker coal from an Illinois mine run lot.

WRITE TODAY FOR COMPLETE DETAILS AND CRUSHER BULLETIN GC-2.

T. J. GUNDLACH Machine Co., Belleville, Ill.

CRESCENT BELT FASTENERS

Make Good Belts Give BETTER Service

Outside

Pulley side

For Superlative Service from All Flat Belting

For superlative service from ALL flat belting, Crescent, the original Plate and Rivet Belt Fasteners, have unequalled ruggedness. Maintain full STRENGTH of belt for full LIFE of belt. Just cut belt ends square, attach Crescent Plates with Crescent Rivets. For all kinds of belting rubber, leather, balata, etc. Joints are strong, smooth, noiseless, durable, economical, safe. No metal touches pulleys. Crescent Belt Fasteners are used on conveyor, transmission and elevator belting. Thousands in use on these belts in all types of industries, standing terrific strains, handling coal, ore etc. For complete details service charts of sizes, etc. write or phone nearest office today.

CRESCENT BELT FASTENER COMPANY
480 LEXINGTON AVENUE NEW YORK 17
BIRMINGHAM, ENGLAND 132 PARADISE STREET
CINCINNATI 2 CARBON AND MARKET STREET

You get MORE with MESCOWELD Rail Bonds

Type MB-F

MORE types to choose from

MESCOWELD Rail Bonds are made in 20 different types—more types of power bonds than are available from any other manufacturer. You can select exactly the one you need.

MORE dependable performance

Our patented Flashwelding process for attaching terminals to cables guarantees maximum conductivity and long life.

Write or telephone for complete information

MOSEBACH ELECTRIC & SUPPLY CO.
1115 Arlington Ave., Pittsburgh 3, Pa.
Phone: HEmlock 1-8332

ment Printing Office, Washington 25, D. C. Reserves flooded by 15 of the known 32 water pools in the area are insufficient to make drainage worth while. Draining recoverable reserves, however, would extend the life of the anthracite industry in this area considerably.

Coal Resources of Michigan, by G. V. Cohee, R. N. Burns, Andrew Brown, R. A. Brant and Dorothy Wright. U. S. Geological Survey, Circular 77. Free, Director, USGS, Washington 25, D. C. Location, depth and thickness of known reserves totaling 125,000,000 tons, with tables, index map, and comments on the decline of coal mining in Michigan.

Illinois Mineral Industry in 1948, by W. H. Voskuil. Illinois State Geological Survey, Urbana, Ill., R. I. 147. 73 pp. 6⅝x10-in; paper. Price not quoted. Data on coal, coke, petroleum and other minerals produced and treated in Illinois. Illustrations and tables.

Small Industrial Plants Can Abate Smoke and Dust, by W. S. Major. Bituminous Coal Research, Inc., 2609 First National Bank Building, Pittsburgh 22, Pa. 7 pp. 8½x10-in; paper. Single copies, free; additional copies, $10 per 100. Reprint of a BCR paper on smoke, cinder and fly-ash abatement for boiler plants under 500 hp.

Preparation Facilities

Bethlehem Collieries Corp., Idamay, W. Va.—Contract closed with Roberts & Schaefer Co. for complete coal preparation plant including crushers, a Jeffrey Baum jig and Bird continuous centrifugal drier to produce 6x0-in coal; feed capacity, 200 tph.

Peters Creek Coal Co., Summersville, W. Va.—Contract closed with Roberts & Schaefer Co., for addition of pneumatic cleaning plant with R&S Super-Airflow cleaners to clean ¼x0-in coal; capacity, 60 tph.

Lion Coal Corp., Wattis, Utah—Contract closed with Roberts & Schaefer Co. for pneumatic cleaning plant with R&S Super-Airflow unit to handle 1 ⅝x⅝-in raw coal; capacity, 70 tph.

Bird Coal Co., Johnstown, Pa.—Contract closed with Roberts & Schaefer Co. for complete pneumatic cleaning plant in addition to present tipple with R & S Super-Airflow units to clean 1½x0-in coal; capacity, 150 tph.

Red Jacket Coal Corp., Coal Mountain, W. Va.—Contract closed with Roberts & Schaefer Co. for complete pneumatic cleaning plant with R&S Super-Airflow unit to handle 3/16x0-in raw coal; capacity, 40 tph.

Barnes & Tucker Co., Bakerton, Pa. Contract closed with Roberts & Schaefer Co. for pneumatic cleaning plant

"W" DENTED SHAKER SCREENS

A "must" when it comes to obtaining an efficient job! *Good* because the spreading and collecting riffles give uniform spread of material over the entire screen surface . . turns the top and middle flow of material down in direct contact with the screen . . . gives an increased screening efficiency up to 33% on fine sizes over an undented flat screen.

Comes in Carbon and Stainless Steels and Manganese Bronze. No sag.

Write us today. We shall reply promptly.

REMALY MANUFACTURING CO., INC.
TAMAQUA, PA.

MAKES GOOD USE . . .

. . . of "Pre-Filed" product data

Mr. W. C. Peternel, Superintendent of the Allegheny Contracting Co. of Pittsburgh, Pennsylvania, is responsible for selecting and *buying* machinery, equipment, supplies and service for his company.

He needs factual data to enable him to compare the relative advantages of various manufacturers' products and to decide which best fits his company needs. Such factual product information is always at his finger tips, for Mr. Peternel is a regular user of the McGRAW-HILL PRE-FILED MINING CATALOGS. In this up-to-date and complete source of manufacturers' products he usually finds everything he wants.

Here's what Mr. Peternel has to say: *"Find MINING CATALOGS useful for all types of mining equipment."*

This useful marketing tool is published by the McGRAW-HILL CATALOG SERVICE. 330 West 42nd Street, New York 18, N. Y.

for faster installation of

SUSPENSION ROOF SUPPORTS

In mines using suspension roof supports, installation time is greatly reduced by applying the nuts with CP Reversible Air Impact Wrenches. These wrenches are equally valuable for the fast removal of nuts where expansion bolt type hangers are being recovered for further use.

Specifically designed for running all types of roof bolt nuts, the CP-3630 Impact Wrench handles nuts to ¾" bolt size; the CP-365, nuts to 1¼" bolt size. Write for complete specifications.

CP-3630-RPSH

CP-365-RPSH

CHICAGO PNEUMATIC TOOL COMPANY

General Offices: 6 East 44th Street, New York 17, N. Y.

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES
ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

PROFESSIONAL SERVICES

Consulting • Plant Design • Research • Inspection

Land Examinations • Testing • Appraisals

ALLEN & GARCIA CO.
ENGINEERS AND BUILDERS OF MODERN COAL OPERATION
Authoritative Valuations and Reports of Mining Properties Equipment and Operation.
332 S. Michigan Ave., Chicago
120 Wall Street, New York, N. Y.

HERBERT S. LITTLEWOOD
CONSULTING ENGINEER
Application — Supervision of Installation
Maintenance - Inspection - Testing
POWER-HAULAGE HOISTING VENTILATION
1104 South Braddock Avenue, Pittsburgh 18, Pa.

GEO. S. BATON & COMPANY
Consulting Engineers
Cost Analysis — Valuations
Mine and Preparation Plant Designs
1160 Union Trust Building Pittsburgh 19, Pa.

P. R. PAULICK and ASSOCIATES
CONSULTING MINING ENGINEERS
Design ..... Modern Mining Methods
& ..... Mine Mechanization Systems
Application ..... Cost Analysis
Domestic and Foreign Work
South Park Road Library, Pa.

F. CARL COLCORD
CONSULTING ENGINEER
COAL LAND VALUATIONS
MINE INSTALLATIONS
OPERATION
Box 268, Paris, Ky. Phone 327W

PIERCE MANAGEMENT, INC.
MINING ENGINEERS
A Background of 32 Years of Design, Consulting, and Management Service to Coal and Mineral Industries in 29 States and 15 Foreign Countries.
Scranton Electric Bldg. Scranton 3, Pa. 1025 Connecticut Ave., N.W. Washington 6, D.C.

EAVENSON & AUCHMUTY
Mining Engineers
COAL OPERATION CONSULTANTS
VALUATION
2720 Koppers Bldg. Pittsburgh 19, Pa.

K. PRINS & ASSOCIATES
Engineers and Consultants
Designers of low cost coal preparation plants, Tipples and structures.
THE PRINS COAL WASHER
Wellston Ohio

HENRY O. ERB
COAL PREPARATION CONSULTANT
PLANT DESIGN AND OPERATION
Midwestern Representative
"VIKING" HOT VAPOR
OIL TREATING PROCESS
819 So. 4th St. — Terre Haute, Ind.

DAVIS READ
Mining Consultant
Modern Production Methods
Plant Design — Preparation
Madisonville, Kentucky

FERGUSON-GATES ENGINEERING CO.
Registered Civil and Mining Engineers
Reports on Developed and Undeveloped Coal Properties
Valuations and Appraisals
Studies of Airborne Dust and Dust Control in the Mines
Consultation Service
Allen Building P. O. Box 673
Telephone 3721 Beckley, W. Va.

TEMPLETON-MATTHEWS CORPORATION
Designing Engineers—Consultants—Builders
MODERN COAL PREPARATION PLANTS THRU "CO-OPERATIVE ENGINEERING"
905-16 Sycamore Bldg. Terre Haute, Indiana

J. H. FLETCHER
20 Years
Continuous Consulting Service
to Coal Mines
Telephone HArrison 7-5151
332 S. Michigan Ave. Chicago 4, Illinois

J. W. WOOMER & ASSOCIATES
Consulting Mining Engineers
Modern Mining Systems and Designs
Foreign and Domestic Mining Reports
National Bank Building Wheeling, W. Va.
Union Trust Building Pittsburgh, Penna.

D. P. GRAHAM
Designer and Consultant
TRACK and TRACKLESS HAULAGE
861 Chelsea Ave. Columbus 9, Ohio
Tel.: DOuglas 2553

Consult these SPECIALISTS
Let them save your time by bringing their broad experience in their specialty to bear on your problems.

with R&S Super-Airflow coal cleaners to be added to existing preparation plant to clean ⅜x0-in coal; capacity, 215 tph.

Di Renzo Coal Co., Llewellyn, Pa.—Contract closed with Wilmot Engineering Co. for one Type A jig for stove coal; feed capacity, 15 tph.

Savitski Bros., Atlas, Pa.—Contract closed with Wilmot Engineering Co. for one Type A jig for stove coal; feed capacity, 15 tph.

Beaver Brook Coal Co., Beaver Brook, Pa.—Contract closed with Wilmot Engineering Co. for one 3½-ft-diameter Wilmot Hydrotator for pea coal; feed capacity, 35 tph.

Lone Star Coal Co., Fontanet, Ind.—Contract closed with Western Machinery Co. for one No. 2C Wemco Mobil-Mill equipped with a 7-ft-diameter Wemco cone separator; cone feed to be varied by shifts, one shift treating 1¼x⅛-in and the second shift handling 4x1¼-in feed; capacity, 40 tph.

Williams Bro. Mining Co., South Hill, Ky.—Contract closed with Deister Machine Co. for one Type 2310 3x10-ft Deister double-deck vibrating screen, to screen plus 1 in, 1x¼ in and minus ¼ in; capacity, 50 to 70 tph, r-o-m.

Reese Coal Co., Jasper, Ind.—Contract closed with Deister Machine Co. for one Type SL-148 Deister high-speed long-stroke carbon screen, to handle ¾ or ⅜ in to dust; feed capacity, 30 tph.

Willard Coal Co., Hitchins Carter County, Ky.—Contract closed with Deister Machine Co. for one Type 148 4x8-ft Deister single-deck heavy-duty vibrating screen.

Maple Coal Co., Albia, Iowa—Contract closed with Deister Machine Co. for one Type 236 3x6-ft Deister heavy-duty vibrating screen equipped with 1- and 5/16-in-opening wire cloth, for 1¼-in feed; feed capacity, 20 tph.

Hanna Coal Co., central preparation plant, Georgetown, Ohio—Shipment by Deister Concentrator Co. of three Model 108 Concenco revolving feed distributors.

Venedy Coal Co., Venedy, Ill.—Shipment by Deister Concentrator Co. of one 4x7-ft Leahy double-surface heavy-duty vibrating screen for stoker coal.

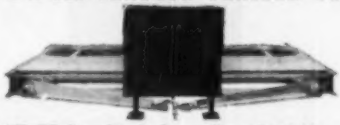
Hitchman Coal & Coke Co., Zelienople, Pa.—Contract closed with Jeffrey Mfg. Co. for 1-compartment diaphragm jib; capacity, 150 tph, 4x0-in coal.

Jamison Coal & Coke Co.—Contract closed (by Industrial Engineering Co.) with Jeffrey Mfg. Co. for 8-cell Baum jig; capacity, 600 tph, 8x0-in coal.

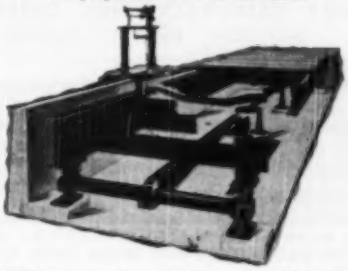
WINSLOW

Dependable — Accurate

TRUCK and TRACTOR TRAILER SCALES



TYPE "C. S." *Portable Scale*—easily and quickly set up—with preparation held to minimum.



TYPE "S" *Pit Scale*—for weighing trucks and tractor trailers—Platform lengths 18 ft. to 60 ft. inclusive.

WINSLOW SCALE COMPANY

TERRE HAUTE 1, INDIANA

Scale Manufacturers since 1896

"Sutton" SAND DRYING STOVES

The Standard for Over Forty Years

Burns Any Type of Fuel

The "Sutton" Sand Dryer may be fired with any type of fuel. While most "Sutton" Sand Dryers are equipped to burn coal, they can be furnished with burners for natural gas or fuel oil.

"SUTTON" FEATURES

- Simple in operation
- No skilled labor necessary
- Made in four sizes
- Lowest original cost
- Economical upkeep
- Topmost efficiency

SATISFACTION GUARANTEED

Catalog and Prices sent upon request

INDIANA FOUNDRY COMPANY

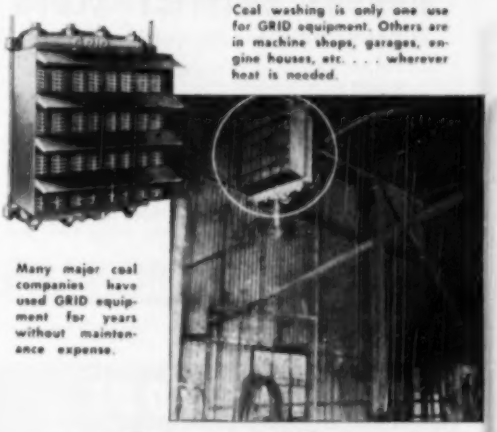
950 Oak Street **Indiana, Pa.**

LEARN WHY..

THE COUNTRY'S LARGEST **COAL COMPANIES** ARE TURNING TO

GRID

FOR HEATING-ESPECIALLY COAL WASHING



Coal washing is only one use for GRID equipment. Others are in machine shops, garages, engine houses, etc. . . . wherever heat is needed.

Many major coal companies have used GRID equipment for years without maintenance expense.

It's Because-

GRID Cast iron construction withstands sulphuric and other corrosive fumes.

GRID Wide "fin" spacing facilitates easy cleaning—no loss in efficiency by dirt clogged heating sections.

GRID Will withstand steam pressures up to 250 lbs.—and is free of electrolysis.

GRID "Fins" are cast integral with the steam chamber, assuring even distribution of heat. GRID "fins" can not come loose from the steam chamber to cause loss of heating efficiency.

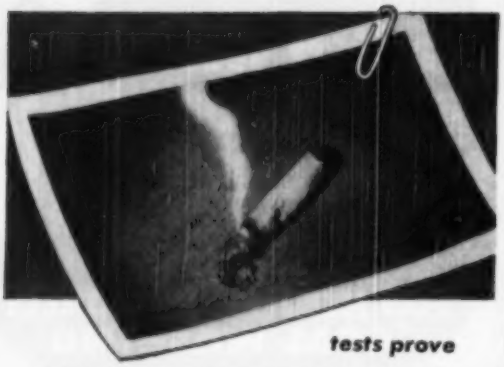
GRID design incorporating proper fan sizes, motor speeds and outlet temperatures results in a properly balanced heating unit.

Investigate

Investigate today GRID system of high-pressure unit heaters, blast coils and radiation . . . the answer to maintenance-free heating for railroads

D. J. MURRAY MANUFACTURING CO.

WAUSAU, WISCONSIN



tests prove

DANDUX BRATTICE CLOTH

is better built for the job!

FLAMEPROOFED under carefully controlled methods in accordance with Dandux higher laboratory standards.

WEARS LONGER with more efficient, easier handling.

PROTECTS BETTER under all working conditions.

MILDEW RESISTANT finest quality yarn more closely woven into stronger cloth.

LOWERS COSTS . . . may be hung and used over and over.

QUALITY CONTROLLED AT DANIELS MILLS by carefully testing and checking uniformity during every step of manufacture.

C. R. DANIELS, INC., 75 WEST ST., N. Y. 6, N. Y.

Specify Dandux from Your Dealer

FLORY HOISTS

Manufacturers of Steam, Electric and Gasoline Hoists of all types; also parts for all model Flory Hoists.

FLORY MANUFACTURING COMPANY, BANGOR, PENNSYLVANIA

HOFFMAN BROS. DRILLING CO.

Diamond Core Drilling Contractors

Punxsutawney, Pa. · Tel. 382

WE HAVE SPECIALIZED IN TESTING BITUMINOUS COAL LANDS FOR MORE THAN 40 YEARS

GASOLINE • STEAM • ELECTRIC DRILLS • WE PRE-GROUT SHAFT LOCATIONS • HORIZONTAL DRILL HOLES FROM 3" TO 14" FOR DEWATERING MINES • OUR OPERATORS ARE HIGHLY SKILLED

WE HAVE ALWAYS GUARANTEED SATISFACTORY COAL CORES . . . We solicit your inquiries

BUY THE TOOL THAT'S BUILT FOR THE JOB!

ONE-MAN COAL DRILL

. . . specifically designed and built for drilling coal. Universal motor — operates on AC or DC current. Cuts costs. More power "pound for pound" — more efficiency day after day!

Write today for FREE illustrated bulletin.

THE CINCINNATI ELECTRICAL TOOL CO.

Division of The R. K. LeBlond Machine Tool Co.

2635 MADISON ROAD • CINCINNATI 8, OHIO

It's YOUR Future—Make the most of it!

Start now to earn the bigger pay in electrical repair

WAS there ever such an opportunity to get started in electrical maintenance and repair—and at top-notch wages? Are you ready—with experience and ability—to cash in on it? Others are getting just the sort of background needed—quick! practical!—to handle the great variety of electrical maintenance and repair work today—from this well-known electrical library. You can, too!

THE LIBRARY OF ELECTRICAL MAINTENANCE AND REPAIR

5 vols., 1,913 pages, 1,729 illustrations

Gives you the "know-how" to tackle any wiring or motor job. Five books show you HOW—to install all types of motor and generator units—to inspect and repair motor starters and generators—to diagnose motor and generator troubles—to test armature windings—test induction motors, etc., etc. One book is full of trouble-shooting charts that show quickly symptoms, causes, specific remedies, etc.

Take the first step toward improving your future—Mail this coupon TODAY.

No money down — special price — easy payments — FREE trial

McGraw-Hill Book Co., Inc., 330 W. 42nd St., N. Y. 18.

Send me Electrical Maintenance and Repair Library, 5 volumes for 10 days' examination. If I find the books satisfactory, I will send you $2.50 in 10 days, and $3.00 a month until $17.50 has been paid. Otherwise I will return the books postpaid.

Name .....

Address .....

City ..... Zone ..... State .....

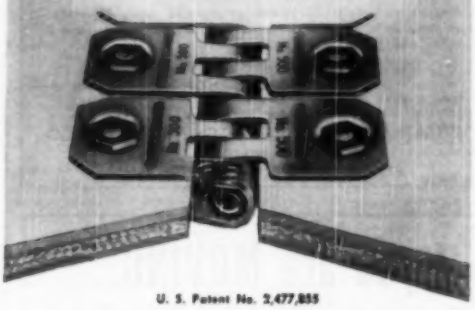
Company .....

Position ..... C 9-50

This offer applies to U. S. only

... the new separable

FLEXCO HINGED BELT FASTENERS



U. S. Patent No. 2,477,855

- For joining underground extension conveyors.
- A FLEXCO fastener that is HINGED. Has removable hinge pin.
- Troughs naturally, operates smoothly through take-up pulleys.
- Strong, durable . . . pull or tension is distributed uniformly across joint.
- For conveyor belts 3/16" to 1/2" thick.

Order From Your Supply House. Ask for Bulletin HF 500.

FLEXIBLE STEEL LACING CO
4638 Lexington St., Chicago 44, Ill.

and your mine building is **WARM..**
with an E. K. Campbell Heavy Duty
FURNACE FAN SYSTEM!

Add the economy of this "quick warm-up" to your other savings with an E. K. Campbell installation:

1. Lower operating cost
2. Lower maintenance costs
3. Greater fuel economy
4. Lower first cost

The result — important savings on your production costs. *And proper heating results are guaranteed!*

for
TIPPLE
WAREHOUSE
GARAGE
REPAIR SHOPS
WASHERY

Write today for full information.

E. K. CAMPBELL COMPANY
KANSAS CITY 3, MISSOURI

"We look into the Earth."

CORE DRILLING
—anywhere!

PENNSYLVANIA Drilling CO.
DRILLING CONTRACTORS AND MFRS.
1205 Chartiers Ave. **PITTSBURGH, PA.** WAlnut 1-8866

PERFORATED METAL
COAL MINING SCREENS
Manufactured exactly to your specifications.
Any size or style screen, in thickness of steel wanted with any size perforation desired.
We can promptly duplicate your present screens at lowest prices.
CHICAGO PERFORATING CO.
2443 West 24th Place
CHICAGO 8, ILL. VI. 7-4191

Member of a Great Pump Family

There is a PUMP by Aurora for every pump job.
TYPE-OD
Aurora Horizontally Split-Case, Double Suction, Single Stage Centrifugal Pump.
For general water supply for municipalities, industries, office buildings, institutions—also—for handling liquids, chemical solutions, oils etc., in a wide variety of industries. Write for Bulletin 105-M for further details.

DISTRIBUTORS IN PRINCIPAL CITIES

AURORA Always PUMPS
AURORA PUMP COMPANY
92 Loucks Street, Aurora, Illinois

NUSSCO AUTOMATIC MINE SIGNALS

For Main Haulage • Prevent Collisions
Save Trip Time

A two wire cable connects two or more signals together into one block. Only one signal can show proceed on the entrance of a trip, all other signals show stop.

- Low in Cost.
- Easy to Install.
- Write for Catalog.

NACHOD & UNITED STATES SIGNAL CO.
INCORPORATED
4771 Louisville Ave., Louisville, Ky.

CESCO ELECTRICALLY OPERATED TRACK SWITCH

Thrown by Motorman

Operates Switch Safely • Saves Time and Money

This modern track switch is thrown swiftly and safely by motormen as they sit in their cabs. It saves time and money, and is fool-proof and dependable!

Over 40 years experience manufacturing
ELECTRIC TRACK SWITCHES

Write for Catalog
CHEATHAM ELECTRIC SWITCHING DEVICE CO.
INCORPORATED
4780 Crittenden Drive, Louisville, Ky.

Core Drilling *by Contract*

Exploration for coal and other mineral deposits. Foundation test boring and grout hole drilling for bridges, dams and all heavy structures.

Core Drill Contractors for more than 60 years

JOY MANUFACTURING CO.
Contract Core Drill Division
MICHIGAN CITY, INDIANA

If you are MOVING...

Don't forget to notify us at least three weeks in advance to insure uninterrupted service to your subscripion to COAL AGE.

Please send your change of address together with your old address to:

DIRECTOR of CIRCULATION
COAL AGE, 330 West 42nd Street
New York 18, N. Y.

DON'T FORGET TO NOTIFY YOUR POSTMASTER, TOO!

SEARCHLIGHT SECTION

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITION VACANT

POSITION OPEN—Assistant Engineer—Must be familiar with Coal Cleaning Plant design. State experience and salary expected. P 7396, Coal Age.

POSITION WANTED

COAL MINE Engineer, Manager, and Consultant with many years experience, and mature judgment in the development and management of coal mines, design of preparation plants, and the mechanical and electrical engineering of mines. Well trained in making reports for these purposes: appraisals, valuations, financing, rehabilitation programs, production increases, and operation betterments. Experienced in both domestic and foreign projects. PW 7436, Coal Age.

REPLACEMENT ENGINE
For Your 2½ Yd. Shovel

Buda 6 DC. 1611 Diesel Power Unit, 170 H.P. at 900 R.P.M. Rebuilt and Guaranteed. A-1 Condition, F.o.b. Lexington, Ky. $5,000.00.

WILSON MACHINERY & SUPPLY CO.
139-151 North Mill St., Lexington 6, Ky.

SACRIFICE SALE

1—Joy-type 5B-1 Buddy Cutting Machine—220 volt A.C.—6 ft. cutter bar with truck—300 ft. of 24 conduit approved trading cable—100 S.B. 22 Sulmet bits and jacks.
This machine acquired new 9 months ago. Will guarantee to the fullest extent.

1—New 20"x40" Bonded Double Roll Crusher complete with flywheel and hopper.

Write or phone:
ESPOSTO COAL COMPANY
Pittsburgh Phone: BRandywine 1-4729
579 Hawkins Ave. North Braddock, Pa.

FOR LEASE
380 Acres of No. 3 Elkhorn Coal

90 acres on Railroad opposite 290 acres requiring 800' Aerial Tramway. Last Independently owned tract in Knott County, Kentucky. For particulars communicate with Sam S. Porter, P.O. Box 30, Lexington, Kentucky.

FOR SALE
TIE AND TIMBER TREATING PLANT

New hot and cold bath treating plant with 14' steel tanks complete with all cocks, piping, controls, hoists, etc. Bolted structural steel shed. A well engineered and fabricated plant.

MID-CONTINENT COAL AND COKE CO.
STURGIS, KENTUCKY

FOR SALE
Two-roll Link-Belt Crusher

Capable of reducing run-of-mine coal to 2"x0 at the rate of 250 tons per hour, complete with 220 volt motor and starter. The crusher can be adjusted to produce 2", 3" or 4"x0 coal. This equipment is as good as new.

INLAND STEEL COMPANY
Wheelwright, Kentucky

EAST TENNESSEE COAL MINE

Account illness of owner, want to sell or lease on favorable terms 1,000 ton per day capacity mine loading coal over five track tipple, preparing all grades from best quality seam this district. If interested communicate with

BO 7404 COAL AGE
330 W. 42nd St., New York 18, N. Y.

WANTED

Strip Coal Property with or near Loading Facilities. Stripping equipment now available to produce 1500 Tons per day.

Prefer West Virginia Properties.

Contact, Tuckahoe Mining Company, Inc., Box 266, Tuckahoe, New York.

FOR SALE

1201 High Lift Lima—2½ yard bucket—excellent condition. Now working—located in Eastern Ohio.

FS 7489, COAL AGE
330 W. 42nd St., New York 18, N. Y.

FOR RENT

1—1055LC, P&H Dragline or Crane, 100' Boom, 4 C.Y. Bucket.

1—855LC, P&H Dragline or Crane, 90' Boom, 2 C.Y. Bucket.

USONA CONSTRUCTION CO.
925 Boatmens Bank Bldg.
St. Louis 2, Mo. Tel. Co. 3314

WANTED
SHORTWALL CUTTING MACHINES

2—No. 212 Goodman Shortwall Cutting Machines, 50 HP, 210 Volts DC.

SWAN CREEK MINING CO.
ST. CHARLES, MICH.

For Sale or Trade. 2 A.C. Motors complete with starters; ball bearing center section and front end; for CE7 Sullivan Machine. Will trade for 250 V. D.C. Motor for CE7 Sullivan Machine.
Have several A.C. Motors for G20 Goodman Shaker Conveyor. Will trade for Goodman D.C. Motor that can use on G20 Goodman Drive, or would like to buy D.C. Motor for G20 Goodman Shaker Drive.

JESS SHEFFIELD COAL MINE
Hartford, Kentucky

FOR SALE

CRUSHERS

1—24x24 McNally Pittsburgh single roll crusher.

1—24x36 McNally Pittsburgh single roll crusher.

1—24x48 McNally Pittsburgh double roll crusher.

1—36x60 Link Belt double roller crusher.

1—18x18 Jeffrey single roll crusher.

HOISTS

1—Ottumwa Iron Works conical drum hoist, serial #3142, weight 35,000#, 1¼" rope, complete with remote control and hydraulic brake. Direct connected to GE 300 HP motor, model #C2647, type ITC 5017, form M 3/60/2200V, 570 RPM, 72½ amps, 270 secondary amps, complete with automatic switchboard.

1—Ottumwa Iron Works, single rigid cylindro-conical drum hoist, serial #6000, weight 43,000 lbs. 1⅛" rope, complete with remote control and hydraulic brakes direct connected to Western Electric 150 HP motor, model 17815, type MT-364-10-150-720, form B, 3 phase, 60 cycle, 440 volts, slip ring, secondary volts 256, amps. 187, secondary amps. 182, speed full load 700, serial #5453215, continuous 40° C. Complete with controller and resistance.

1—Ottumwa Hoist #3561, drum diameter 48", face 36", face grooved for 1" rope, equipped with post brake 54" diameter, hand operated, single reduction cut spur gears, 19 teeth and 196 teeth, 1¼" pitch, 16" face, drum shaft 7" diameter, drum shaft bearing 7"x14", pinion shaft bearing 4⅛"x15" of the ring oiling type.

LOCOMOTIVES

1—15 ton Goodman ball bearing locomotive, 42" gauge, type 38-A-O-4-C.

2—8 ton Goodman ball-bearing locomotives, 36" gauge, type 220-T.

1—8 ton Goodman ball bearing locomotive, 42" gauge, type 32-AO-IT.

1—6 ton Westinghouse locomotive, 36" gauge, Class 4-2-35-C-437.

1—6 ton Jeffrey locomotive, 42" gauge.

6—6 ton GE ball bearing locomotives, 42" gauge, class EMITMMM11 with HM831-A motors.

1—4 ton Whitcomb Battery locomotive, 36" gauge.

2—4 ton Goodman ball bearing locomotives, 36" gauge, type 42-I-4-T. (with or without gathering reels).

MINING MACHINES

1—112AA Goodman DC Universal mining machine, 36" gauge, 6½ ft. cutter bar.

2—CLES, AC, 3 phase, 60 cycle, 220 volt, Sullivan longwall mining machines.

1—Jeffrey Shortwall Mining Machine, 35 HP, AC, 6' cutter bar complete with tip turn truck, cable and reel.

1—Sullivan Shearing Machine, Class CH11, DC, 9' cutter bar.

2—Sullivan Longwall Mining Machines, type CHS, 3/60/220 volts, 20" cutter bars.

1—12AA Goodman mining machine, 50 HP, 42" gauge.

2—Goodman Standard mining machines, 50 HP, 3/60/220 volts, 42" gauge.

MOTOR GENERATOR SETS

1—250 KW GE motor generator set #675642, type MPC-6-200-1200, form L, amps 726, speed 1200, volts no load 350, volts full load 275, 200 KW nominal—300 KW 2 hrs., 55° C rise direct connected to 300 HP GE syn. motor #1352959, type ATI-6-300-1200, form C, 60 cycles, 75 amps, speed 1200 RPM, volts 2200, PF 8, HP output 300. Complete with switchboard.

1—90 KW GE motor generator set type CD 123, form A, comp. wound, 327 amps, 250 volts no load, 275 volts full load, 1200 RPM, cont. 50 deg. cont., #1539906 direct connected to 125 HP GE syn. motor type TS, form PK, frame 7556, 3/60/2200 volts, 1200 RPM, 37.6 amps, cont. 40 deg. cent. Excitation 250 volts 4.8 amps. .74 PF, #4314071, complete with switchboard.

1—200 KW Synchronous Ridgeway Motor Generator Set, 1200 rpm, 250 volts, DC, 220 volts, AC, complete with switchboard.

VIBRATORS

1—Allis Chalmers Aero-Vibe double deck screen size 5' x 8'.

1—Stephens Adamson two deck vibrator size 4' x 10'.

1—Doubledeck vibrator size 3' x 6½'.

1—Selectro double deck vibrating screen size 4' x 10'.

RAILS

Trackload and car lots of good second hand 16 and 25 lb. rails.

ELECTRIC DRILLS

2—Dosley AC Electric coal drills, size 4T2 phase, 60 cycle, 220 volts.

1—Dosley Electric coal drill DC.

TIPPLE

1—Steel tipple complete with shaker and concrete silos. Capacity 1,000 tons per day.

DUCKBILLS

2—4220 Goodman Duckbills, DC.

LOADERS

1—6 BU AC Joy Loader, 3/60/220 Volts.

PIT CARS

200—All Steel Timken Roller Bearing Mine Cars. Overall height 3' 10", Overall length 7' 6". Overall width 6' 5". Wheelbase, 2' 6", 42" gauge, 14" Timken Roller Bearing Wheels.

We are distributors for John A. Roebling's Sons Company wire rope and fittings.

GAVENDA BROTHERS, Inc.

CANTON, ILLINOIS

DRAGLINES — SHOVELS

9-W BUCYRUS-ERIE ELECTRIC DRAGLINE; 200' boom, 8 yd. bucket, individually driven, regenerative drum sets. Machine like new. Pa. location.

170-B BUCYRUS-ERIE ELECTRIC 6 YARD SHOVEL.

MODEL 621-S PAGE DIESEL DRAGLINE; 125' boom, 7 yd. bucket.

MODEL 618 PAGE DIESEL DRAGLINE; 110' boom, 5 yd. bucket.

4161 MARION ELECTRIC DRAGLINE; 110' boom, 4 yd. bucket.

1201 LIMA SHOVEL; 32' boom, 22 stick, 3½ yd. dipper; Cummins diesel engine.

54-B BUCYRUS-ERIE DRAGLINE; 90' boom, 2½ yd. bucket; Buda diesel engine.

3500 MANITOWOC DRAGLINE; 85' boom, 2¼ yd. bucket; Caterpillar engine.

802 LIMA DRAGLINE; 75' boom; 2½ yd. bucket; Hesselman engine.

37-B BUCYRUS-ERIE COMBINATION 1½ YD. SHOVEL AND DRAGLINE.

Frank Swabb Equipment Co., Inc.

Hazleton Nat'l Bank Building

Hazleton, Pa. Telephone 4910

REBUILT ELECTRICAL MACHINERY

M-G SETS & ROTARIES

1000 KW G.E. 600 v.—2300/4000 v.
500 KW West. 250 v.—2300 v.
300 KW G.E. Rotary 275 v—2300/4000 v.
200 KW Ridg. 275 v.—2300 v.
150 KW G.E. 500 v.—2300 v.
150 KW Ridg. 275 v.—2300 v.
100 KW G.E. 275 v.—2300/4000 v.

AC MOTORS

HP	MAKE	SPEED	TYPE	WDG.
1000	West.	450	CW	S.R.
500	G.E.	450	MT	S.R.
350	West.	600	CW	S.R.
300	G.E.	450	IM	S.R.
140	G.E.	600	IK	S.C.
150	West.	514	CS	S.C.
150	G.E.	600	ATI	Syn.
100	G.E.	450	IM	S.R.
100	West.	1200	CS	S.C.
75	G.E.	600	ITC	S.R.

Also smaller units to specifications.

DC GENERATORS

275 KW West. 250 v. 500 RPM
200 KW West. 5K 250 v. 600 RPM
150 KW West. 5K 250 v. 600 RPM
150 KW G.E. RC 500 v. 1200 RPM
150 KW Triumph 250 v. 600 RPM
100 KW West. 250 v. 600 RPM
Also smaller sizes in stock.

LOCOMOTIVES AND CUTTING MACHINES

25 Ton G.E. 500 v. 42/44" Ga. HM 824
8 Ton Goodman 250 v. 44/42" Ga. 9104C2
8 Ton Goodman 500 v. 44/42" Ga. 9104C2
6 Ton Westgh. 250 v. 36" Ga. 904
6 Ton G.E. Battery 42/44" Ga.
5½ Ton Ironton Battery 42/44" Ga.
12 CA Goodman 6' cutter 250 v. DC
12 G3 Goodman 6' cutter 220 v. AC
35 B Jeffrey 6' cutter 250 v.

Transformers, hoists, pumps, compressors.

MOORHEAD ELECTRICAL MACHINERY CO.

363 Noblestown Road, Oakdale, Pa. WAlnut 1-4300

SEND your TRANSFORMERS to ELECTRIC SERVICE CO., INC.

A financially responsible organization specializing in buying, selling, repairing, rewinding and redesigning transformers only.

Experienced personnel assures you first class workmanship and complete satisfaction.

Every transformer guaranteed for one year

The Electric Service Co., Inc.

"AMERICA'S USED TRANSFORMER CLEARING HOUSE"

MARIEMONT Since 1912 CINCINNATI 27, OHIO

VIBRATING SCREENS
CRUSHERS — SCALES — FEEDERS
CONVEYORS — IDLERS

GUARANTEED EQUIPMENT
IMMEDIATE SHIPMENT

VIBRATING SCREENS

Eccentric weight types. Several in stock from 3' x 6' to 3½' x 8'. Priced from.....$435.00

Heavy duty eccentric shaft types. A few on hand, in excellent condition. Sizes from 3' x 8' to 5' x 14'. One to 4 decks. Priced with cloth from $1,485.00

COAL CRUSHERS

Double and single roll models. Types to produce ¾" stoker, and others to crush up to 8" resultant. Capacities from 15 to 500 tons per hour. Steel hoppers included. Priced from.....$435.00

HEAVY DUTY PLATE AND PAN FEEDERS

Complete with motor and drive.

15 to 25 ton per hour capacity.....$ 383.00
25 to 60 ton per hour capacity.....500.00
50 to 100 ton per hour capacity.....1207.00
100 to 175 ton per hour capacity.....1504.00

TRUCK SCALES

15 ton Truck Scales.....$ 495.00
20 ton Truck Scales.....561.00
30 ton Truck Scales.....622.00

Others to 50 ton capacity. All scales complete with structural steel weighbridge. Parts and weighing beams for other makes of motor truck scales.

MINE CAR AND TIPPLE SCALES

Single and double track platforms.
Capacities 5 to 20 tons. Priced from.....$343.00

HEAVY DUTY FLIGHT CONVEYORS

Any length. Flights up to 6" x 24". All welded structural and sheet steel. Heavy duty, double guided chain. Prices from.....$495.00

PORTABLE FLIGHT CONVEYORS

Mounted on rubber tires and adjustable underearriage. All welded structural and sheet steel; double guided heavy duty chain; steel flights to 6" x 24". Electric or gasoline power. Priced from...$4450.00

CONVEYORS — PICKING TABLES

Troughing idler conveyors, picking tables. Any length, belt widths to 60". Prices from.....$435.00

TROUGHING IDLERS AND ROLLERS

All steel. Interchangeable with other well-known makes. Replaceable precision ball bearings. No bearing adjustments required. Easy to start and will run in cold weather. Rust proof ball races; maintenance is negligible.

3-roll Troughing Idlers for these sizes:

12" belt	$20.00	24" belt	$23.00
16" belt	21.00	30" belt	24.00
18" belt	22.00	36" belt	25.00
	42" belt	$26.00	

1-roll Return Idlers for these sizes:

24" belt	$ 9.00	30" belt	$10.50
30" belt	10.00	42" belt	11.50
	36" belt	$12.50	

PREFABRICATED CONVEYOR SECTIONS & ACCESSORIES

Build your own conveyor; we have in stock standard sections, head and tail pulleys, screw takeups, gravity takeups, troughing and picking idlers and return rollers, belting, drives, speed reducers, sheaves, etc. Phone us your order.

MOTORS — SPEED REDUCERS

500 in stock including D.C. motors and gearhead. All guaranteed. Priced from 50% of manufacturer's list.

BONDED SCALE & MACHINE COMPANY
2190 SOUTH THIRD STREET
COLUMBUS 7, OHIO
PHONES: GArfield 2186
Evenings: UNiversity 2832

MOTOR GENERATORS

1—500 KW G.E. Syn., 275 V. 900 RPM
1—300 KW G.E. Syn., 275 V. 1200 RPM
2—300 KW G.E. Syn., 275 V. 1200 RPM
2—250 KW G.E. Syn., 275 V. 1200 RPM
1—150 KW G.E. Syn., 275 V. 1200 RPM
1—100 KW G.E. Ind., 275 V. 1200 RPM

ROTARY CONVERTER

1—500 KW G.E. Syn. 275 V. HCC 1200 RPM

ARMATURES

1—500 KW G.E. 275 V. MFC Generator 900 RPM
1—300 KW G.E. 575 V. HCC Converter 1200 RPM

AIR COMPRESSORS

2—4200' Ingersoll-Rand, Type PRE-2, Size 25 x 20½ - 24, Direct Connected to 700 HP, G.E. Syn. 75 Motors, 440/600/2300/4000 Volts AC.

LOCOMOTIVES

2—20 T JEFFREY 250 V. MH-77 48-36" Ga.
2—20 T JEFFREY 250 V. MH-77 48-36" Ga.
2—15 T JEFFREY 250 V. MH-77 42-36" Ga.
1—13 T JEFFREY 250 V. MH-2110 42-32" Ga.
1—13 T GOODMAN 250 V. 134-B 48-36" Ga.
1—10 T JEFFREY 250 V. MH-110 44-32" Ga.
1—10 T G.E. 250 V. HM-829-A 48-36" Ga.
2—10 T GOODMAN 250 V. 36-B 48-36" Ga.
1—8 T WEST. 250 V. ML-906-C 44-36" Ga.

LOCOMOTIVE MOTORS

2—Jeffrey 250 MH-77, Ball Bearing
2—G.E. 500 V. HM-820-A, Ball Bearing
2—WEST. 250 V. ML-908-C, Ball Bearing
2—WEST. 250 V. ML-907-C, B. B. (New)
1—WEST. 250 V. ML-907-C, Ball Bearing
2—WEST. 250 V. ML-906-C, Ball Bearing
2—WEST. 250 V. ML-904-R, B. B. (New)
1—WEST. 250 V. ML-901-C, Ball Bearing
2—G.E. 85/125 V. HM-828-A, Ball Bearing

LOCOMOTIVE ARMATURES

MH-77-250 V. MH-78-500-V. 908-C-500 V.
907-C-250 V. 906-C-250 V. 903-C-250 V.
901-C-250 V. 158-C-250 V. HM-820-A-500 V.
HM-828-A-85/125 V.

WALLACE E. KIRK COMPANY
501 GRANT BUILDING PITTSBURGH 19, PENNSYLVANIA

SYNCHRONOUS ROTARY CONVERTERS

4-500 KW syn. 600 V. 60 cy.
3-750 KW syn. 600 V. 60 cy.
3-1000 KW syn. 600 V. 60 cy.
2-500 KW syn. 600 V. 25 cy. (Portable)

IGNITRONS

1-300 KW 600 V. 60 cy.
1-1000 KW 600 V. 60 cy.
All above complete with Transformers and automatic Switching.

LOCOMOTIVE

1-44 Ton Diesel Electric
100000 ft. 500000 CM. Insulated Feeder.

JOHN D. McGUIGAN, INC.
624 SO. MICHIGAN AVENUE
CHICAGO 5, ILLINOIS
HARRISON 7-4077

ELECTRIC HOIST

Lidgerwood Single Drum

Equipped with 40 HP Slip Ring Motor 3/60/220 or 440 Volts

With Drum Type Controller & Resistance Excellent Condition. Attractive Price.

Also Vibrating Screens, Conveyors, Coal Crushers, Car Spotters, etc.

What Do You Need?

THE INDUSTRIAL EQUIPMENT CORP.
910 First National Bank Bldg.
Pittsburgh 22, Pa.

R. T. McNEES
COAL MINE EQUIPMENT
NORTON, VIRGINIA
Hotel Norton — Phones 608 & 300

FOR SALE

25 ton American Gas Locomotive Crane
40 ton Orton Diesel Locomotive Crane
30 ton Davenport Diesel Locomotive
50 ton Whitcomb Diesel Elec. Loco.
2½ yd. Bucyrus 54B shovel dragline
2 yd. Lorain diesel crane dragline, 100 ft. boom. Built 1948
20 yd. Koppel air dump cars. Std. ga.
1300 ft I-R 2 stage elec. air compressors
150 HP Kewanee portable boilers

MISSISSIPPI VALLEY EQUIPMENT CO.
509 Locust St. St. Louis 1, Mo.

BUY "USED" AND SAVE
NEW—USED-REBUILT MACHINE TOOLS.
Lathes, Drills, Shapers, Mills, Hammers, Air Compressors, Grinders, Foundry Machinery, Machine Shop & Industrial Equipment
80 page catalog available.
FALK MACHINERY COMPANY
15 Ward St., Rochester, N. Y. Phone Baker 3887

RAILS-TIES
TRACK ACCESSORIES

RAILS — CARS

All sections of rails and good serviceable second hand cars, all gauges, also spikes, bolts, frogs, switches and ties.

M. K. FRANK
400 Lexington Ave. New York, N. Y. — 310 Park Bldg., Fifth Ave. Pittsburgh 22, Pa.
Reno, Nevada — Carnegie, Pa.

RELAYING RAIL
TRACK ACCESSORIES
MIDWEST STEEL CORP.
Gen. Off.: CHARLESTON 21, W. VA.
Warehouses
CHARLESTON, VA.
KNOXVILLE, TENN. • PORTSMOUTH, VA.

RELAYING RAIL
All Sizes
Track Accessories
LEFTON INDUSTRIAL CORP.
Genl. Office: 212 Victor St.
St. Louis 4, Mo.

NOW SELLING BARGAINS IN ALL THE EQUIPMENT FROM PHELPS DODGE COAL MINES

Frank J. Wolfe Sheldon J. Wolfe

JOY EQUIPMENT, 250 VOLT DC

7—**14BU-7RCE** Loading Machines, new in 1947 and 1948.
4—**32E9J** Shuttle Cars.
7—**40E16AX** Shuttle Cars.
10—**PL117E** Elevating Conveyors.
6—**T8-8PE** Low Pan Caterpillar Mining Machine Trucks.
5—**T8-6APE** Caterpillar Mining Machine Trucks.

SHORTWALL MINING MACHINES, 250 VOLT DC

10—Jeffrey **35-BB** Permissible Type, 9' cutter bars, all in 22,000 and 23,000 series.
5—Jeffrey **35-B** Permissible Type 6½' cutter bars.
7—Goodman **118-EJ** Permissible Type, Universal.
5—Goodman Standard **12-AA** Permissible Type.

MINE CARS

500—All Steel Rotary Dump 3-Ton Mine Cars with 19" Timken Roller Bearing Wheels, 36" gauge, height 36", all practically new. A bargain for quick sale.
5—Man Trip Cars, 36" gauge, seating capacity 30 men; purchased new in 1947, Differential Steel Car Company.

LOCOMOTIVES, 36" TRACK GAUGE (Can Be Changed to 42" by Shoving Wheels Out on Axles)

4—Jeffrey 20-ton Locomotives with **MH-77**, 250 volt DC ballbearing motors, 5" armorplate frame, contactor controls.
4—15-ton Jeffrey Locomotives, 3½" armorplate frame, contactor controls.
1—10-ton General Electric Locomotive, Serial No. 16952, with **HM-630**, 250 volt DC ballbearing motors, equalizing long leaf springs, C-183 controller, Type DB-900, Form D contactors.
4—6-ton Westinghouse Combination Battery and Trolley Locomotives with practically new Exide batteries.
2—4-ton Goodman Combination Battery and Trolley Locomotives, Type 142C-0-T, new Exide batteries.

BELT CONVEYOR

1—Joy LaDel 26" Belt Conveyor, 3000' centers, practically new, complete with drives, head and tail sections, idlers and all necessary appurtenances.

ROTARY CONVERTERS

2—300 KW Very Late Type General Electric Synchronous Rotary Converters, Type HCC-6-700-1200, Form F, 1200 RPM, 60 cycle, 250-275 volt DC, Amp. Nom. 1090, all in 4,000,000 series, on structural steel base, each with three (3) Single Phase, Type HJ, Form KR, 60 cycle, 100 KVA Transformers, 2070/2300/4000 Y-206.
3—200 KW Very Late Type General Electric Synchronous Rotary Converters, Type HCC-6-200-1200, Form F, 1200 RPM, 60 cycle, 250-275 volt DC, Amp. Nom. 727, all in 4,000,000 series, on structural steel base, each with three (3) Single Phase, Type HJ, Form KR, 60 cycle, 100 KVA Transformers, 2070/2300/4000 Y-206. All of the above Rotary Converters are equipped with switchboards, switchgear, and automatic reclosing circuit breakers for the DC end. Also have
2—100 KW General Electric Synchronous Rotary Converters, Type HCC-6-100-1200, Form F, 1200 RPM, 275 volt DC, complete with all necessary appurtenances.
Several banks of 300 KVA and 500 KVA General Electric Transformers, Form KDD, Type H, 60 cycle, primary voltage 6600, secondary voltage 2300.

STEEL TIPPLES WITH WASHERS

1—5-Track Steel Tipple with McNally-Norton 5-cell No. 552 Coal Washer, capacity 300 tons per hour.
1—3-Track Steel Tipple with McNally-Norton No. C-523 Coal Washer, capacity 250 tons per hour.

Both complete with Shaker Screens, Picking Tables, Motors, Conveyors, and all necessary appurtenances. Suitable for drift, shaft, strip or slope mines.

COAL MINE EQUIPMENT SALES COMPANY

FRANK J. WOLFE
306-307 Beasley Building

Since 1912
Long Distance Phone 34

SHELDON J. WOLFE
Terre Haute, Indiana

BETTER BARGAINS THAN EVER

LOCOMOTIVES

2—G.E. H-M 80T Locomotives, 48" Ga., 31" above Rail, Armor Plate Frame, 6 Ton.
1—825 G. E. Locomotive, Rebuilt, 44" Ga., 27" above Rail, 250 Volt, 5 Ton.
1—82T G.E. Locomotive, 44" Ga., 8 Ton.
1—G.E. H-M Locomotive, 48" Ga., 32" above Rail, Armor Plate Frame, 6 Ton.

COAL CUTTING MACHINES

2—Jeffrey 35-B Shortwall Machines, 250 V.
3—Goodman Standard 12AA Shortwall Machines.
2—Goodman 112 Universal Machines, 250 Volts.
1—Goodman 512 Cutting Machine, 250 Volts.

MISCELLANEOUS

1—G.E. 200 KW Rotary Converter complete with transformers and switchboards, 2300/4600 Volt AC, 250 Volt DC.
2—150 KW G.E. & Westinghouse Rotary Converters.
2—Track Mounted Air Compressors—105 Cu. Ft. Transformers, Various Sizes.
Rock Dusters—Coal Drills—Mine Fans.
200 Tons 40# Relaying Rail. Other Sizes Also.
2000—44" Ga., 25# Mine Ties, Switches, Frogs etc.
Tipple Equipment, 3 and 5 track.
Vibrating Screens—Various Sizes.
4—Picking Tables.
Loading Booms, 20" & 26" Chain & Flight Type.
1—Boom Hoist—2 Ton.
2—Shaker Screens.
Hi Pressure Coal Spray Outfit.
12,000 Gallon Oil Storage Tank.
3—Joy Shuttle Cars, Type 32B.
2—Joy 26" Chain Conveyors—330'.
2—Joy 14" Conveyors, 200' Ea.
1—Jeffrey 12" Conveyor, 100'.
1—Joy Belt Conveyor 26"—750' Long.
10 Ton Mine Scale with Streeter Amet Recorder.
72—Used End Dump 18" Ga. Low-Vein Mine Ties.
Stationary Motors, All sizes AC and DC.
2,000 Five Gallon U. I. Cans.
Railroad Car Spotting Hoist—60 HP.
Pipe, Beams, Plate, All Sizes.
Thousands of other Items—Parts and Supplies.

J. H. FISH & COMPANY

Logan, W. Va. — **We Buy — Sell — Trade** — **Phone 2825**

OTTUMWA HOIST: cylindro-conical, 1" rope groove, hoisting range to 400', 150 HP AC 2300 volt motor, complete with all magnetic controls ready for operation, excellent condition.

PUMP: Fairbanks Morse, figure 5592, 2-stage, "Bulltogether," with 30 HP motor and AP automatic primer, 175 gal./min. at 400 ft. total head, new condition, $350.

RR TRACK SCALE: 100 ton, 50 ft., weighs perfectly, $500.00 F.O.B., now set up for operation.

TRANSFORMERS: 2300/230 volt; 7½, 15, 25 and 37½ KVA.

LONGWALL CUTTING MACHINES: 2—Goodman L8DG3A, 50 HP, AC, 4 foot bar.

ELMIRA COAL COMPANY
Call W. E. Widmer, Tel. No. 866
Excelsior Springs, Mo.

REBUILT MINING MACHINES

READY TO GO INTO SERVICE

1—112 A.A. Goodman Universal D.C.
4—112 G.1A. Goodman Universal 220 Volts A.C.
2—112 G.3 Goodman Universal 220 Volts A.C.
4—50 H.P. Goodman Standards 220 V. A.C.
2—Goodman Track Cutting Machines 42 inch Gauge A.C. 220 Volts.
2—Goodman Loading Machines 42 in. Gauge type 360D A.C. 220 Volts.
4—35B Jeffries Machines 230 Volts D.C.
1—35BB Jeffries Machines 220 Volts A.C.
6—CE Sullivan Machines A.C. and D.C.
2—7B Sullivan Machines 250 Volts D.C.
1—300 K.W. G.E. M.G. Set 1200 r.p.m. complete with Switch Board & Controls.
1—100 K.W. G.E. M.G. Set 1200 r.p.m. can be seen in operation.
1—Electric Hoist complete with 150 H.P. G.E. Motor.

LOCOMOTIVES

6—6 Ton G.E. Ball Bearing 42 inch Gauge.
3—Goodman Caterpillar Trucks 220 Volts A.C.
4—8 BU Jay 36 and 42 inch Gauge on Cats. A.C. and D.C.
4—6 BU Jays 42 inch Gauge on Cats. A.C. and D.C.
3—2 Lee Norse Six Ton Kool-Mobiles Model K.M.C. 462.

THOMAS GILLESPIE

State Road 67 — **Bicknell, Ind.**

BARGAINS FOR SALE OR RENT

100 KW. Diesel Engine Generator Sets

11—100 kw. 250/275 V. cp. wd. D.C. Delco Generators dir-con. to 150 HP, GMD-8, 5¾x7, 8 cyl. Superior DH-823 Engines. Elec. starting, power panels and accessories.
3—100 kw., same as above with 230/460 V. New A.C. Generators.
1—60 kw. West. 250 V. D.C. dir. con. to NEW P&H. Diesel Engine.
3—35 kw. 250 V. D.C. NEW GAS or GASOLINE Engine Generator Sets.
4—37½ kva. 230/460 V. 3 ph., 60 cy. NEW Gas or Gasoline, also Diesel Engine Generator Sets.

230 V. D.C. Motors

HP	MAKE	TYPE	SPEED
200	Westg.		900
175	G. E.	MD	450
150	Westg.	SK	900
125	G. E.	CD	600
125	Century	drip proof	1800
100	Westg.	SK-100	540
100	Westg.	S	625
75	G. E.	CDM	1000
60 NEW	G. E.	DC—splash proof	850
40 NEW	Westg.	SK-133	850

D.C. Generators—250-275 V.

KW	MAKE	TYPE	SPEED
250	Westg.		1200
200	Westg.	SK-HS	600
150	Westg.	SK	900
110	Westg.	SK-100	720
100	Westg.	SK	720
100	Westg.	S	850
100	G. E.		900
75	Allis Chalmers		720
75	Westg.	S	850
75	Allis Chalmers		850
60 NEW	G. E.	CD	1150
40 NEW	Westg.	SK-133	1150

M. G. SETS — "SPECIALS" READY TO SHIP

250 kw. West. 250 v. D.C. 1200 rpm., 580 HP. Syn. Motor 2300/4000 v. complete with switch.
200 kw. West. 250 v. D.C. 1200 rpm., dir. con. 200 HP., 220/440 v., 3 ph. 60 cy. Syn Motor, A.C. & D.C. switch.

Transformers—1 ph. 60 cy.

No.	KVA	Make	PRIMARY	Sec.
3	500	G.E.	2300	230/460
6	333	Maloney	2300	230/460
3	200	G.E.	2400/4160Y	240/480
3	150	West.	2400/4160Y	240/480
3	150	Pgh.	2300	230/460
1	100	Peerless	2300	230/460
3	75	West.	2300	230/460
1	75	West.	13200/6600	2300
3	37½	Packard	2300	115/230
2	25	Maloney	2300	115/230

Write for New Catalog

DUQUESNE ELECTRIC & MFG. CO.

PITTSBURGH 6, PA.

CARLYLE
INDUSTRIAL RUBBER PRODUCTS FOR EVERY PURPOSE

IMMEDIATE DELIVERY OF CONVEYOR, ELEVATOR AND TRANSMISSION BELTING — PIPE, WATER, SUCTION, AIR, STEAM AND WELL HOSE HOSE

WHY WAIT

We have 8 to 48

RUBBER CONVEYOR BELTING

TOUGH COVERS—Heavy duty, specially compounded abrasive resistant rubber covers having high tensile strength. Thoroughly capable of withstanding the abrasive action of bulk materials. Properly vulcanized to the carcass to assure utmost performance, economically.

STRONG CARCASS—Constructed of finest quality 28 and 32 ounce tough cotton duck, properly treated and impregnated to avoid mildew from moisture and atmospheric conditions. Each ply thoroughly embedded in rubber to prevent ply separation.

FLEXIBILITY—Careful attention has been given in the construction of all belts to have the proper flexibility assuring the following desirable features: troughs easily, runs true on all idlers, gouge resistant, excellent for long and short hauls and slope installations.

Avoid delays in your production schedules!

We carry in stock for your immediate requirements, Conveyor Belting in widths from 8 inches to 48 inches.

Width	Ply	Thickness Top Cover	Thickness Bottom Cover	Type of Duck Carcass
8"	4	1/16"	1/32"	28 Oz.
10"	4	1/16"	1/32"	28 Oz.
12"	4	1/16"	1/32"	28 Oz.
14"	4	1/16"	1/32"	28 Oz.
16"	4	1/8"	1/32"	28 Oz.
18"	4	1/8"	1/32"	28 Oz.
20"	4	1/8"	1/32"	28 Oz.
20"	5	1/8"	1/32"	28 Oz.
24"	4	1/8"	1/32"	28 Oz.
24"	5	1/8"	1/32"	28 Oz.
26"	5	1/8"	1/32"	28 Oz.
30"	4	1/8"	1/16"	32 Oz.
30"	5	1/8"	1/16"	32 Oz.
30"	6	1/8"	1/16"	32 Oz.
36"	6	1/8"	1/16"	32 Oz.
42"	5	1/8"	1/16"	32 Oz.
48"	8	1/8"	1/16"	32 Oz.

INQUIRE FOR SIZES NOT LISTED.
ELEVATOR TRANSMISSION & V-BELTING ALSO IN STOCK

All our belting made by the leading belting manufacturers.

Write for Free Booklet on Installation, Care & Maintenance of Conveyor Belting.

SEND US YOUR INQUIRIES FOR OTHER RUBBER PRODUCTS.

CARLYLE RUBBER CO., Inc.
62-66 Park Place, New York 7, N. Y.
Phone: Digby 9-1810

BELT CONVEYORS

1—30", 70' long, new belt, complete with motor.
1—42", 20' long, complete with motor.

PUMPS

1 HP to 25 HP I. R. Motor Mtd. Cent. Pumps.
4" & 8" Peerless Deep Well Pumps.
6" & 8" Hydroseal Slurry Pumps.
2" Wilfley Sand Pumps.

DIESEL GENERATORS

1—D-4400 Caterpillar Diesel Power Unit (less than 3,000 hrs.). V-belted to a 30 KVA Fairbanks Morse 220 volt, 3 phase Generator, complete with Exciter and Switchboard.

PIT CARS

150 Card Iron Works R.B. Pit Cars, 36" Gauge, 1.7 Ton Cap.
35 Card Iron Works R.B. Pit Cars, 36" Gauge, 1 Ton Cap.

MISCELLANEOUS

1—Box Iron Wks. Sgl. Drum Hoist with 15 HP Hoist Motor.
1—CE-7 AC Coal Cutter.
1—25 KW Crocker-Wheeler, 250 Volt Generator.
1—4'-6-disc Eimco Filter.
1—10x12 Horiz. Gardner Compressor with 50 HP Motor, 800'-10" Galv. Vent. Pipe.
3—Geligher Atuo. Samplers—adjustable stroke.
100—Tons 60# Relaying Rail.
25—Tons 85# Relaying Rail.
AC & DC Motors.
1—Manierre Type Box Car Loader.
1—4'x8' Hum-mer Vib. Screen.
Drain Chain Conveyors.
1—42"x10' Air Receiver.
1—36" x 8' Air Receiver.
1—5 KVA Lighting Transformer.
1—Mine Safety Appliance Rock Duster.
1—90 Cu. Ft. Card Rocker Dump Car.

SEND FOR BULLETIN NO. 10

FLORENCE MACHINERY AND SUPPLY CO.

Suite 904, Equitable Bldg. C. J. Parrish, Mgr. Denver 2, Colo.

DISMANTLING COAL CLEANING PLANT & MINE AT HAZLETON, PA.

10 x 10 and 12 x 12 timber and brackets.
Diester concentrating tables.
Coal Crushers.
Sizing Shakers, complete.
Wilmot Chain Conveyors with drives.
Speed Reducers
Rotary Screens.
Wilmot 5' and 7' hydrotators.
Wilmot Buck, Rice, Barley hydrotators.
400 Amp Arc Welder on truck.
Hough Pay-Loader.
Cleveland Wagon Drill.
Trolley Locomotives.
200 KW General Electric MG Set.
5 to 200 H.P. Centrifugal Pumps.
Shortwall Mining Machines.
Longwall Mining Machines.
1 H.P. to 600 H.P. Motors and Controls.
La Del Shaker Conveyors.
2 Cu. Yd. Daniels Murtaugh Buckets.
Many other items too numerous to mention.

Send us your inquiry.

Berrettini Electric Company
380 N. Main Street, Plains, Pa.
Phone Wilkes-Barre 2-4061-Hazleton 4136

FOR SALE

We have the following equipment for sale at our Hocking mine, which is about four miles north of Athens, Ohio:

Joy 14 BU loader.
G.E. 10 ton locomotive—42" G.
Jeffrey MH-100 locomotive—8 ton.
Jeffrey MH-88 cable reel locomotive.
G.E. 150 KW converters, complete with switchboards and transformers.
G.E. 100 KW converter, complete with switchboards and transformers.
Goodman shortwall.
Robins vibrators.
Jeffrey 6A drills.
Bank cars, Joy parts, loading booms, belt conveyors, feeders and other items too numerous to mention.

COTTINGHAM, INC.
Nelsonville, Ohio
Phone Nelsonville 230
Athens 852 or 24002

NEW and REBUILT MOTORS GENERATORS TRANSFORMERS
1 to 1500 H. P.
ELECTRIC EQUIPMENT CO.
ROCHESTER 1, NEW YORK
Write for Free 1800 Catalog.

NEW and REBUILT STORAGE BATTERY

LOCOMOTIVES

1½ to 10 Ton 13" to 36" Track Gauge.
GREENSBURG MACHINE CO.
Greensburg, Pa.

GUARANTEED EQUIPMENT

SUBSTATIONS

300 KW, 175 KW, 75 KW complete with manual or automatic control. Advise primary AC voltage.

MOTORS

150 HP, 900 RPM 220/3/60 Syn.
125 HP, 1800 RPM, 230 volt DC
80 HP, 1200 RPM, 220/440/3/60 Ind.
75 HP, 1800 RPM, 220 or 440/3/60 Ind.
75 HP, 900 RPM, 220/3/60 Syn.
8-7½-10-15 HP, AC & DC in Stock.

C. B. LOCKE CO.
308 Tennessee Ave., Charleston 32, W. Va. Telephone 3-8136

DIRECT CURRENT

NEW — MOTORS — USED

7½ h.p. G.E. 200 v. 450/1350 r.p.m.
7½ h.p. G.E. 1 v.—600/1200 r.p.m.
7½ h.p. G.E. 220 v.—1150 r.p.m.
5 h.p. C-W Vertical, 230 v.—960 r.p.m.
5 h.p. G.E. v.—150/1800 r.p.m.
3 h.p. West. 220 v.—835 r.p.m.
1 h.p. G.E. 230 v.—825/2100 r.p.m.
1 h.p. G.E. 230 v.—1150 r.p.m.

PARTIAL LISTING—INQUIRIES SOLICITED
NEW—USED A. C MOTORS—ALL SIZES.

FALK MACHINERY COMPANY
13 Ward St., Rochester, N. Y.
Baker 5887

2—Goodman Style G20B77 permissible Shaker Conveyors, latest type, with manual type HAD duckbill and 20 HP Westinghouse AC motor, 3 phase, 60 cycle, 220 volt, 1160 RPM.

without line troughs.....$2,600.00 each
with 200' new line troughs.....4,350.00 each

The above equipment is to include all usual accessories and is guaranteed to be in A-1 condition. New in 1943. It is offered subject to prior sale, f.o.b. Sunnyside, Utah.

KAISER STEEL CORPORATION
Sunnyside Mine
Sunnyside, Utah

MOTORS — M. G. SETS — TRANSFORMERS

SQUIRREL CAGE MOTORS, 3 Ph., 60-Cy

Qu.	HP	Make	Type	Volts	RPM
1	400	G.E.	IK	2300	514
1	400	G.E.	KT-412	2200	450
1	400	G.E.	KT-412	550	450
1	300	Al.Ch.	AR	440	1760
1	250	Whse.	CS	2200	1160
1	250	Whse.	CS	440	1160
1	200	Al.Ch.	AR	220/440	880
1	150	G.E.	I-K	440	730
1	150	Cr.Wh.		440	690
1	125	Whse.	CS-761	440	1750
1	125	Whse.	CS-772	2200	1170
1	125	Whse.	CS-772	440	1170
2	125	Al.Ch.	AR	440	435
2	125	C.W.		440	450
3	100	Whse.	CS-662	440	1750
1	100	Al. Ch.	AR-226	2200	1160
1	100	Al. Ch.	AR-226	440	1160
2	100	G.E.	KT-556	2200	865
1	100	F.M.	HR-201C	440	880
2	100	G.E.	KT-556	550	865
1	100	Al.Ch.	AR	550	690
1	100	F.M.	H-241B	440	450
1	100	Whse.	CS-838	2200	514
1	75	G.E.	I-15-K	220	570
1	75	Al.Ch.	AR	2200	1765
1	75	Al.Ch.	AR	550	1765
1	75	Whse.	CS	440	1750
1	75	G.E.	KF-542	440	1200

1—Unused G.E. Vertical Pump Motor, 300 HP, KF-574, 2200 Volt, 3 phase, 60 cycle, R.B., 590 R.P.M., drip proof.

SYNCHRONOUS MOTORS, 3 Ph., 60-Cy.

Qu.	HP.	Make	PF	Volts	R.P.M.
1	700	G.E.	80	2300	720
1	450	G.E.	90	440	360
1	300	Whse.	100	440	450
1	300	Al.Ch.	100	2200	900
1	250	Al.Ch.	90	2200	514
1	200	G.E.	100	2300	514
1	200	Whse.	80	440	900
1	150	G.E.	100	2200	900
1	150	G.E.	80	550	450
1	150	Whse.	100	2200	600
2	125	El.Mch.	100	4000	900
1	125	G.E.	80	2200	900
3	100	Whse.	80	440	1800
1	100	Ideal	80	440	900
1	100	Whse.	100	2300	1200
2	100	G.E.	80	440	600

SLIP RING MOTORS—CONSTANT DUTY

3-Phase, 60-Cycle

Qu.	HP	Make	Type	Volts	RPM
1	5000	G.E.	MT	2200	257
1**	2800	G.E.	MT-30	2300	240
1**	1500	Al.Ch.	ANY	2300	229
1**	1500	Cr.Wh.		2300	257
2**	1000	Al.Ch.	ANY	2300	225
1	1000	Whse.	CW	2300	444
1**	800	G.E.	MT-32	4000/2300	360
1	700	G.E.	MT-432	2300	400
1**	600	G.E.	MT-413	2300	710
2	500	G.E.	I-14-M	2300	450
1	500	Whse.	C.W.	2300	575
1	400	G.E.	MT-574	550	585
1	400	G.E.	I-837-M	2300	875
1**	400	G.E.	I-M	2300	590
1**	400	Al.Ch.	ANY	2300	565
2	400	G.E.	MT-412	2200	444
1	300	G.E.	I-835-M	2300	1200
1	300	Al.Ch.	ANY	2300	565
1	250	Al.Ch.	ARY	440	440
1	250	Whse.	CW-1106	2300	580
1	250	Whse.	C.W.	550	514
1	200	Al.Ch.	ANY	2300	565
1	150	G.E.	I-803-M	2300	1750
1	125	Whse.	C.W.-870	2300	900
1	100	Al.Ch.	ARY	440	1160
1	100	F.M.	420-C	440	900
1	80	G.E.	IM	440	800
1	75	G.E.	I.M.	440	695
1	50	G.E.	MT-536	2300	1150

***—Mill type pedestal bearing.
Note: Some of these motors can be furnished as 2-bearing.

TRANSFORMERS—(OIL COOLED)

Qu.	K.V.A.	Make	Type	Ph.	Volt.
2	4500	G.E.	HT	3	37000/18500/2300
3	500	G.E.	H	1	13200/11820/220/440
1	200	Pitts.	OISC	1	14400/12000/220/440
1	150	G.E.	H	1	19000/8500/550/2300
2	100	Whse.	66	1	13975/10955/230/460
3	100	G.E.	H KP	1	4160/120/240
2	75	G.E.	H KP	1	2400/4160Y/120/240

MOTOR GENERATOR SETS

Qu.	K.W.	Make	R.P.M.	A.C. Volts	D.C. Volts
2	1500	G.E.	600	600	4160/2400
1	1250	Al.Ch.	720	525	4000/2000
1	600	Al.Ch.	600	550	2300
1	400	Whse.	900	230	4000/2300
1	300	G.E.	720	250/125	2300/440
1	150	C.W.	900	550	2300/440
1	100	Ridgway	1500	575	4000/2300
1	75	Al.Ch.	900	250	2300
1	75	Whse.	1200	125	440
1	75	Whse.	1200	250	2300/440
1	75	Star	1200	230	440/230
1	50	Reliance	1750	230	440/230

(4-unit variable voltage set with 5-K.W. exciter)

1	30	Reliance	1750	550	440/230
2	35	G.E.	1750	125	440/220

Still available for inspection on its original foundation (1) 1500-KW Westinghouse M-G Set, 250-VDC, 514 R.P.M., comp. interpole, 2150-HP, syn. motor, 60 P.F., 514 R.P.M., 4000 Volt, 3-ph., 60-cy. (will reconnect for 2300-V), with complete DC and AC panels and reduced voltage starting equipment for syn. motor.

DIRECT CURRENT MOTORS

Qu.	H.P.	Make	Type	R.P.M.
1***	2500	G.E.	MCF-14	200/400
4***	1500	Whse.	Encl.	600
2***	1250	Whse.	Mill	300/600
6***	900	Whse.	Encl.	600
1	500	G.E.	MDC	145/330
1	400	Al.Ch.	Mill	600/1200
1	350	G.E.	C.D. 169	1150
1***	350	G.E.	MCF-4	200/600
1	325	Whse.	G.M.	450/900
1	200/250	El. Dy.	#22	600/1200
1	200	Whse.	Mill	600/1200
1	180	G.E.	MPC	600
2*	150	Cr. Wh.	82-H	590

Above are all 230 VDC except where marked ***
****Pedestal Bearing 525/600 VDC. Mill Type—T.K.P.C.

T. B. MAC CABE COMPANY

4316 CLARISSA STREET — PHILADELPHIA, PENNA

BELT CONVEYORS FOR SALE

1—42" x 450' Robins Belt Conveyor with Robins anti-friction troughing and return idlers with dual drive gear reducer and 75 H.P. A.C. motor.

1—42" x 125' Robins Conveyor, same specifications.

Please send for details and low price.

CONSOLIDATED PRODUCTS CO., INC.
13-21 Park Row — New York 7, N. Y.
Phone: BArclay 7-0600

Order Today
Tomorrow May Be Too Late

ROTARY CONVERTERS

500 KW, 275 volts DC, Westinghouse
300 KW, 275 volts DC, Westinghouse
200 KW, 275 volts DC, Westinghouse
200 KW, 275 volts DC, Allis-C.
Complete with transformers & swbds.

Write or 'phone for details.

R. H. Benney Equipment Co.
Substation Specialists
5034 Montgomery Rd., Norwood 12, O.
Cincinnati Phone: MElrose 1108

Mine and Slope Hoists

1—20,000# Dbl. Drum Mundy, w/o motor
1—26,000# Nordberg Sgl. Drum
1—10,000# Nordberg Sgl. Drum AC
1—17,000# Ottumwa Sgl. Drum AC
1—11,000# Ottumwa Sgl. Drum AC
1—16,000# Allis Chalmers Sgl. Drum
1—30,000# Allis Chalmers Dbl. Drum AC
1—7,000# Flory Sgl. Drum AC

Carpullers and Loaders

1—5000# Jeffrey Carspotter AC
1—6000# Brownie Carspotter AC
1—5000# Link-Belt Carspotter AC
1—20,000 Amer. Hoist Carspotter AC
1—S.A. Heavy Duty Loader AC

Miscellaneous

1—5 ton Merrick Weightometer
1—Buc. Erie 65 3¼ Elec. Shoval
1—3 yd. Sauerman Scraper Bucket System

HAWKINS & CO.
154 So. Michigan Ave., Chicago 3, Ill.
TELEPHONE HARRISON 7-0725

FOR SALE—COPPER CABLE

70,000 Ft. 250,000 C.M. Copper Wire. Weatherproof Insulation, on Reels.

GLAZER STEEL CORPORATION
KNOXVILLE, TENNESSEE PHONE 4-8601

IN STOCK

500 TONS NEW 20# RAIL
19' LENGTHS, ATTRACTIVE PRICES QUOTED.

M. K. FRANK
480 Lexington Ave., New York 17, N.Y. — 401 Park Bldg., Pittsburgh, Pa.

COMPLETE BELT CONVEYORS AND CONVEYOR BELTING

COMPLETE ELEVATORS • DRAG CONVEYORS • PAN & RECIPROCATING FEEDERS

ELEVATOR BUCKETS — WRITE FOR LITERATURE — CONVEYOR PULLEYS

IMMEDIATE DELIVERY — REDUCED PRICES

FRANK A. KREMSER AND SONS, INC.
3435-45 N. 5th STREET
PHILADELPHIA 40, PENNA.

COAL AGE ADVERTISERS IN THIS ISSUE

MORE INFORMATION on any product advertised in COAL AGE may be easily secured by using the postage-free card facing p 128.

*Acker Drill Co. 190
*Air Reduction 170
*Allen & Garcia Co. 20
*Allis-Chalmers Mfg. Co. 21, 64, 117
*Allis-Chalmers Tractor Div. 10-11
*Aluminum Co. of America 29
American Cable Div. of American Chain & Cable Co. ..... Third Cover
*American Car & Foundry Co. ..... Second Cover
American Crucible Products Co. 172
*American Cyanamid Co. ..... Insert between pp. 52-53
*American Optical Co. 62
*American Pulverizer Co. 50
Armco Drainage & Metal Products Co. 149
Armstrong-Bray Co. 182
*Atlas Car & Mfg. Co. 172
Atlas Powder Co. 28
Aurora Pump Co. 153

Baker Mfg. Co. 124
Baker-Raulang Co. 185
Baltimore & Ohio Railroad 181
*Bemis Bro. Bag Co. 170
*Bethlehem Steel Co. 36, 37, 65
*Bird Machine Co. 4
Bituminous Casualty Corp. 120
Bondad Scale Co. 182
Boston Woven Hose & Rubber Co. 131
*Bowdil Co. 60
Bucyrus-Erie Co. 43

Campbell Co., E. K. 183
Carboloy Co., Inc. 30-31
Cardox Corp. 14-15
*Carnegie-Illinois Steel Co. 165
*Carter Products Corp. 164
Caterpillar Tractor Co. 24-25
Central Mine Equipment Co. 121
Cheatham Electric Switching Device Co. 194
Chevrolet Motor Div., General Motors Corp. 52D
Chicago Perforating Co. 193
*Chicago Pneumatic Tool Co. 189
Cincinnati Electric Tool Co. 192
*Cincinnati Mine Machinery Co. 179
Cities Service Oil Co. 115
Colorado Fuel & Iron Co. 187
Colorado Iron Works Co. 177
*Connellsville Mfg. & Mine Supply Co. 132
Conrader Co., E. 186
*Continental Gin Co., Industrial Div. 159
*Crane Co. 183
Crescent Belt Fastener Co. 188

Daniels, Inc., C. R. 192
*Deister Machine Co. 126
*Detroit Diesel Engine Div., General Motors Corp. 40-41
Dodge Div., Chrysler Corp. 175
Duff-Norton Mfg. Co. 128
duPont de Nemours & Co., E. I. (Explosives Div.) 137
duPont de Nemours & Co., E. I. (Grasselli Chemicals Div.) 144
duPont de Nemours & Co., E. I. (Rayon Div.) 80
Durabool, Inc. 178

Eagle Iron Works 180
Eaton Mfg. Co. ..... Insert between pp. 60-61
*Eimco Corp. 48-49
*Electric Storage Battery Co. 97
*Ensign-Bickford Co. 66

*Fairmont Machinery Co. 52
*Farmers Engrg. & Mfg. Co. 158
Firth Sterling Steel & Carbide Corp. 155
Flexible Steel Lacing Co. 193
*Flood City Brass & Electric Co. 176
Flory Mfg. Co. 192
Foster Co., L. B. 150

Gates Rubber Co. 54
*General American Transportation Corp. 12
*General Electric Co., Chemical Dept. 37
*General Electric Co., Apparatus Dept. 22-23
*General Electric Co., Construction Materials Dept. 180
General Tire & Rubber Co. 119
*Goodman Mfg. Co. 18-19
Goodrich Co., B. F. 1, 99
Goodyear Tire & Rubber Co. 13
Gould National Batteries, Inc. 103
Greensburg Machine Co. 156
Gulf Oil Corp. 61
Gulf Refining Corp. 61
Gundlach Machine Co., T. J. 187
Guyan Machinery Co. 176

Harnischfeger Corp. 55
*Hazard Insulated Wire Works 135
*Hendrick Mfg. Co. 174
Hewitt Rubber of Buffalo, Div. of Hewitt-Robins, Inc. 38
*Hoffman Bros. Drilling Co. 192
Hollingshead Corp., R. M. 34
*Holmes & Bros., Inc., Robt. 184
Hulburt Oil & Grease Co. 2-3

*Indiana Foundry Co. 191
International Harvester Co. 143

*Jeffrey Mfg. Co. ..... Insert between pp. 20-21
*Jenkins Bros. 101
Jones & Laughlin Steel Corp. 52A, 171
*Jones Foundry & Machine Co., W. A. 149
*Joy Mfg. Co. ..... Insert between pp. 36-37, 194

*Kennametal, Inc. 113
King Powder Co., Inc. 145
*Koehring Co. 26-27

*Laughlin Co., Thomas 118
LeKol Co. 174
LeTourneau, Inc., R. G. 8-9
Lee-Norse Co. 168
*Link-Belt Co. ..... Fourth Cover, 36

Mack Trucks, Inc. 44-45
Macwhyte Co. 31
McGraw-Hill Book Co. 192
*McGraw-Hill Catalog Service 188
*Mosebach Electric & Supply Co. 188
*Mott Core Drilling Co. 154
Murray Mfg. Co., D. J. 191
*Myers-Whaley Co. 169

Nachod & U. S. Signal Co. 194
*National Electric Coil Co. 129
*National Malleable & Steel Castings Co. 139

Ohio Brass Co. ..... Insert between pp. 104-105
*Oliver United Filters 162

Paris Mfg. Co. 131
*Pennsylvania Crusher Co. 133
Pennsylvania Drilling Co. 193

*Quaker Rubber Corp. 173

Reliance Elec. & Engrg. Co. 151
Remaly Mfg. Co., Inc. 188
Robins Conveyor Div., Hewitt-Robins, Inc. 39
Roebling's Sons Co., John A. 63
*Rome Cable Co. 46-47
*Ruberoid Co. 186

SKF Industries, Inc. 167
*Salem Tool Co. 147
*Sanford-Day Iron Works 16-17
*Screen Equipment Co. 161
Searchlight Section 194-199
*Simplex Wire & Cable Co. 42
Sinclair Refining Co. 66-67
*Sprague & Henwood, Inc. 178
Standard Oil Co. (Indiana) 30
Stearns Magnetic Mfg. Co. 156
Sun Oil Co. 134
Syntron Co. 166

Texas Co. 6-7
*Thermoid Co. 33
Tide Water Associated Oil Co. 141
*Timken Roller Bearing Co. 53

Union Wire Rope Corp. 136
United Engineers & Constructors, Inc. 107
United States Rubber Co. 109, 163
*United States Steel Corp. 153, 165
United States Steel Supply 133

Victaulic Co. of America 146
*Vulcan Iron Works 38

Walworth Co. 123
*Wedge-Wire Corp. 130
*Wellman Engineering Co. 60B
West Virginia Steel & Mfg. Co. 152
*Western Machinery Co. 127
*Westinghouse Electric Corp. 32-33
Wickwire Spencer Steel Div., Colorado Fuel & Iron Corp. 157
*Willson Products, Inc. 122
Winslow Scale Co. 191

■

PROFESSIONAL SERVICES 190

■

SEARCHLIGHT SECTION
(Classified Advertising)

EMPLOYMENT
Positions Vacant 194
Positions Wanted 194

SPECIAL SERVICES
Rebuilding 195
Repairing 195

BUSINESS OPPORTUNITIES
Offered 194

PROPERTY
For Sale 194

EQUIPMENT
(Used or Surplus New)
For Rent 194
For Sale 194-199
Rail 196

WANTED
Equipment 194

ADVERTISERS INDEX

Benney Equipment Co., R. H. 199
Berretini Electric Co. 198
Bonded Scale & Machine Co. 196

Carlyle Rubber Co., Inc. 198
Coal Mine Equipment Sales Co. 187
Consolidated Products Co., Inc. 199
Cottingham, Inc. 198

Duquesne Electric & Mfg. Co. 197

Electric Equipment Co. 198
Electric Service Co., Inc. 195
Elmira Coal Co. 197
Esposto Coal Co. 194

Falk Machinery Co. 196, 198
Fish & Co., J. T. 197
Florence Machinery & Supply Co. 198
Frank, M. K. 196, 199

Gavenda Brothers, Inc. 195
Gillespie, Thomas 197
Glazer Steel Corp. 199
Greensburg Machine Co. 198

Hawkins & Co. 199

Industrial Equipment Corp. 196
Inland Steel Co. 194

Kaiser Steel Corp. 198
Kirk Co., Wallace E. 196
Kremer & Sons, Inc., Frank A. 199

Lefton Industrial Corp. 196
Locke Co., C. B. 198

MacCabe Co., T. B. 199
McGugan, Inc., John D. 196
McNees, R. T. 196
Mid-Continent Coal & Coke Co. 194
Midwest Steel Corp. 196
Mississippi Valley Equipment Co. 196
Moorhead Electrical Machinery Co. 195

Porter, Sam S. 194

Sheffield Coal Mine, Jens 194
Swabb Equipment Co., Inc., Frank 195
Swan Creek Mining Co. 194

Tuckahoe Mining Co., Inc. 194

Unona Construction Co. 194

Wilson Machinery & Supply Co. 194

*Indicates that detailed information may be found in the 1949-50 MINING CATALOGS.

This index is published as a convenience to the reader. Every care is taken to make it accurate, but C. A. assumes no responsibility for errors or omissions.

"hard-hats" know

ACCO *In Business for Your Safety*

TRADE MARK

AMERICAN CHAIN & CABLE
AMERICAN CABLE DIVISION

Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Seattle, Tacoma, Bridgeport, Conn.

TWO MILES IN ONE FLIGHT!

Here coal is prepared in this new blending and washing plant completely designed and built by Link-Belt. From this plant the washed coal is delivered to the tunnel belt conveyor (right side of above photograph) on which it is transported to the river and rail loading station.

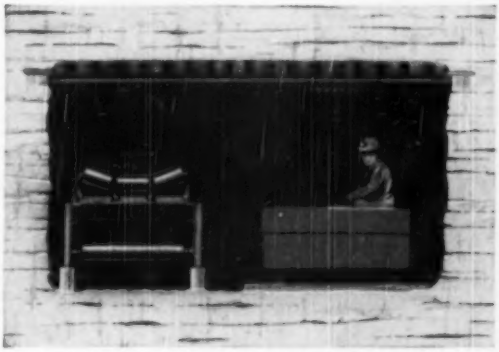
River and rail loading station also built by Link-Belt Company where washed coal is loaded into barges, or by means of a by-pass conveyor, into railroad cars.

World's Longest Single Belt Conveyor

Through a mountain, under forests, roads and streams this single 30" wide belt conveyor transports coal from preparation plant to river and rail loading station—10,900 ft. from foot pulley to head pulley—more than four miles of belt operated by one drive!

After careful analysis of various methods of transportation ultimate economy dictated the selection of this belt conveyor. By building this conveyor in one flight, intermediate transfers, heavy machinery and power wiring were eliminated from the tunnel.

Link-Belt Company engineered, equipped and erected the blending and washing plants, the conveyor equipment and the river and rail loading station. Resulting success of this and other similar projects illustrates the importance of such coordinated effort.



Typical cross-section through tunnel showing belt conveyor and battery driven patrol car. Standard Link-Belt type "100" idlers are used throughout the 2-mile long belt conveyor.

LINK-BELT COMPANY

Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Johannesburg. Offices in Principal Cities. 11.566-A

LINK-BELT

Belt Conveyor

EQUIPMENT

IDLERS • TRIPPERS • BELTS
PULLEYS • BEARINGS • DRIVES